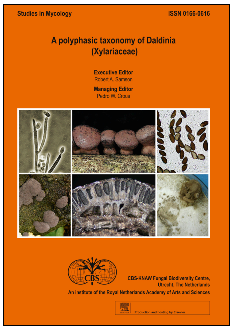


Families of *Diaporthales* based on morphological and phylogenetic evidence

I.C. Senanayake, P.W. Crous, J.Z. Groenewald, S.S.N. Maharachchikumbura, R. Jeewon, A.J.L. Phillips, J.D. Bhat, R.H. Perera, Q.R. Li, W.J. Li, N. Tangthirasunun, C. Norphanphoun, S.C. Karunarathna, E. Camporesi, I. Manawasighe, A.M. Al-Sadi, K.D. Hyde

PII: S0166-0616(17)30028-3

DOI: 10.1016/j.simyco.2017.07.003

Reference: SIMYCO 55

To appear in: *Studies in Mycology*

Received Date: 0166-0616 0166-0616

Revised Date: 0166-0616 0166-0616

Accepted Date: 0166-0616 0166-0616

Please cite this article as: Senanayake IC, Crous PW, Groenewald JZ, Maharachchikumbura SSN, Jeewon R, Phillips AJL, Bhat JD, Perera RH, Li QR, Li WJ, Tangthirasunun N, Norphanphoun C, Karunarathna SC, Camporesi E, Manawasighe I, Al-Sadi AM, Hyde KD, Families of *Diaporthales* based on morphological and phylogenetic evidence, *Studies in Mycology* (2017), doi: 10.1016/j.simyco.2017.07.003.

Families of *Diaporthales* based on morphological and phylogenetic evidence

I.C. Senanayake[1,2,3], P.W. Crous[4], J.Z. Groenewald[4], S.S.N. Maharachchikumbura[5], R. Jeewon[6], A.J.L. Phillips[7], J.D. Bhat[8,9], R.H. Perera[3], Q.R. Li[10], W.J. Li[1,2,3], N. Tangthirasunun[11,12], C. Norphanphoun[3], S.C. Karunarathna[1,2], E. Camporesi[13,14,15], I. Manawasighe[16], A.M. Al-Sadi[5], and K.D. Hyde[1,2,3]

[1]*Key Laboratory for Plant Diversity and Biogeography of East Asia, Kunming Institute of Botany, Chinese Academy of Science, Kunming 650201, Yunnan, China*; [2]*East and Central Asia, World Agroforestry Centre, Kunming 650201, Yunnan, China*; [3]*Centre of Excellence for Fungal Research, Mae Fah Luang University, Chiang Rai, Thailand*; [4]*Westerdijk Fungal Biodiversity Institute, Uppsalalaan 8, 3584 CT Utrecht, The Netherlands;* [5]*Department of Crop Sciences, College of Agricultural and Marine Sciences, Sultan Qaboos University, P.O. Box 34, Al-Khod 123, Oman*; [6]*Department of Health Sciences, Faculty of Science, University of Mauritius, Reduit, 80837, Mauritius*; [7]*Faculty of Sciences, Biosystems and Integrative Sciences Institute (BioISI), University of Lisbon, Campo Grande, 1749-016 Lisbon, Portugal*; [8]*Formerly, Department of Botany, Goa University, Goa 403 206, India;* [9]*No. 128/1-J, Azad Housing Society, Curca, P.O. Goa Velha 403108, India*; [10]*Engineering Research Center of Southwest Bio-Pharmaceutical Resources, Ministry of Education, Guizhou University, Guiyang, Guizhou 550025, China;* [11]*Univ Paris Diderot, Sorbonne Paris Cité, Institut des Energies de Demain (IED), Paris 75205, France*; [12]*Univ Paris Sud, Institut de Génétique et Microbiologie, UMR8621, Orsay 91405, France*; [13]*A.M.B. Gruppo Micologico Forlivese, Antonio Cicognani, Via Roma 18, Forlì, Italy*; [14]*A.M.B. Circolo Micologico, Giovanni Carini, 314 Brescia, Italy*; [15]*Società per gliStudiNaturalisticidella Romagna, 144 Bagnacavallo, RA, Italy*; [16]*Institute of Plant and Environment Protection, Beijing Academy of Agriculture and Forestry Sciences, No. 9 of ShuGuangHuaYuanZhongLu, Haidian District, Beijing 100097, China.*

**Correspondence*: Samantha C. Karunarathna, samanthakarunarathna@gmail.com

Abstract: *Diaporthales* is an important ascomycetous order comprising phytopathogenic, saprobic, and endophytic fungi, but interfamilial taxonomic relationships are still ambiguous. Despite its cosmopolitan distribution and high diversity with distinctive morphologies, this order has received relatively little attention. Currently the existing classification of the group reveals 14 accepted families within the subclass *Diaporthomycetidae*. The current state of *Diaporthales* systematics is reviewed herein based on available morphological studies coupled with DNA sequence analyses from a concatenated dataset of the LSU nrDNA, ITS nrDNA, *rpb2* and *tef1* gene regions. Based on morphological data and phylogenetic inferences, seven new families are introduced in the order, viz. *Apiosporopsidaceae* fam. nov., *Apoharknessiaceae* fam. nov., *Asterosporiaceae* fam. nov., *Auratiopycnidiellaceae* fam. nov., *Erythrogloeaceae* fam. nov., *Melanconiellaceae* fam. nov., and *Prosopidicolaceae* fam. nov. Other families also accepted within the order are *Coryneaceae*, *Cryphonectriaceae*, *Cytosporaceae*, *Diaporthaceae*, *Gnomoniaceae*, *Harknessiaceae*, *Juglanconidaceae*, *Lamproconiaceae*, *Macrohilaceae*, *Melanconidaceae*, *Pseudoplagiostomaceae*, *Schizoparmaceae, Stilbosporaceae* and *Sydowiellaceae*. Taxonomic uncertainties among genera are also clarified and recurrent discrepancies in the taxonomic position of families within the *Diaporthales* are discussed. An updated outline and key to families and genera of the order is presented.

Key words: multi-gene DNA phylogeny, new taxonomic arrangement, phytopathogenic fungi, Sordariomycetes, systematics.

Running head: Families of *Diaporthales*

Taxonomic novelties: New families: *Apiosporopsidaceae* Senan. Maharachch. & K.D. Hyde, *Apoharknessiaceae* Senan. Maharachch. & K.D. Hyde, *Asterosporiaceae* Senan. Maharachch. & K.D. Hyde, *Auratiopycnidiellaceae* Senan. Maharachch. & K.D. Hyde, *Erythrogloeaceae* Senan. Maharachch. & K.D. Hyde, *Melanconiellaceae* Senan. Maharachch. & K.D. Hyde, *Prosopidicolaceae* Senan. & K.D. Hyde. **New genera:** *Marsupiomyces* Senan. & K.D. Hyde, *Microascospora* Senan., Camporesi & K.D. Hyde, *Phaeoappendicospora* Senan., Q.R. Li & K.D. Hyde, *Paradiaporthe* Senan., Camporesi, & K.D. Hyde, *Hyaliappendispora* Senan., Camporesi & K.D. Hyde, *Chiangraiomyces* Senan. & K.D. Hyde. **New species:** *Chiangraiomyces bauhiniae* Senan. & K.D. Hyde, *Coniella pseudokoreana* Senan., Tangthir. & K.D. Hyde, *Cytospora centrivillosa* Senan., Camporesi & K.D. Hyde, *Cytospora junipericola* Senan., Camporesi & K.D. Hyde, *Cytospora quercicola* Senan., Camporesi & K.D. Hyde, *Cytospora rosae* Senan., Camporesi & K.D. Hyde, *Cytospora fraxinigena* Senan., Camporesi & K.D. Hyde, *Diaporthe litoricola* Senan., E.B.G. Jones & K.D. Hyde, *Ditopella biseptata* Perera, Senan., Camporesi & K.D. Hyde, *Gnomoniopsis agrimoniae* Senan., Camporesi & K.D. Hyde, *Hyaliappendispora galii* Senan., Camporesi & K.D. Hyde, *Marsupiomyces epidermoidea* Perera, Senan., Bulgakov & K.D. Hyde, *Marsupiomyces quercina* Senan., Camporesi & K.D. Hyde, *Melanconis italica* Senan., Camporesi & K.D. Hyde, *Microascospora rubi* Senan., Camporesi & K.D. Hyde, *Paradiaporthe artemisiae* Senan., Camporesi & K.D. Hyde, *Phaeoappendicospora thailandensis* Senan., Q.R. Li & K.D. Hyde, *Plagiostoma jonesii* Senan., & K.D. Hyde, *Plagiostoma salicicola* Senan., Camporesi & K.D. Hyde, *Sydowiella urticicola* Senan., Camporesi & K.D. Hyde, *Tubakia thailandensis* Senan., Tangthir., K.D. Hyde; **New combinations:** *Coryneum arausiaca* (Fabre) Senan., Maharachch. & K.D. Hyde, *Microascospora fragariae* (F. Stevens & Peterson) Senan., Maharachch. & K.D. Hyde.

INTRODUCTION

The *Diaporthales* is a distinct order in the subclass *Diaporthomycetidae* (*Sordariomycetes*) and it includes pathogens, saprobes and endophytes, with no known coprophilous, hypersaprobes or mycophylic species (Barr 1978, Rossman *et al*. 2007, Vasilyeva *et al*. 2007, Maharachchikumbura *et al*. 2015, 2016). Taxa of this order inhabit a wide diversity of hosts and substrates, including most economically and ecologically important trees and crops, soil and living animal and human tissues (Barr 1978, Gryzenhout *et al*. 2006c). Species in *Diaporthales* form solitary or aggregated, immersed to erumpent, rarely superficial, orange, brown to black perithecial ascomata, with short or long necks, that are located in stromatic tissues or substrates, with a centrum (or hamathecium) lacking or with few paraphyses (Alexopoulos & Mims 1978, Barr 1978, Castlebury *et al.*

2002). Asci are unitunicate with a conspicuous refractive ring (Hawksworth *et al*. 1995, Rossman *et al*. 2007). Ascospore morphology is diverse, ranging from short to elongate and aseptate or septate with hyaline or pigmented walls. The asexual morphs of *Diaporthales* are generally coelomycetous (Rossman *et al*. 2007), producing acervuli or pycnidial conidiomata, with or without a well-developed stroma. Conidiogenesis is phialidic or rarely annellidic and conidia are usually unicellular or 1-septate (Rossman *et al*. 2007).

Fungal taxa placed in "*Diaporthaceae sensu lato*" were divided into two groups (von Höhnel 1917) as "Eu-Diaportheen", to accommodate genera without allantoid ascospores and "Valseen" to accommodate genera with allantoid ascospores. Nannfeldt (1932) introduced the order *Diaporthales* to accommodate von Höhnel's Eu-Diaportheen group. Luttrell (1951) described *Diaporthales* as an order comprising species that have a "*Diaporthe*-type centrum" and "*Endothia*-type ascus". Chadefaud (1960) analysed characters of stromatic tissues in diaporthoid taxa and recognised families as *Diaporthaceae* or *Cytosporaceae* (= *Valsaceae*), *Melanconidaceae* and *Gnomoniaceae*. Wehmeyer (1975) classified the *Diaporthales* to include three families: *Diaporthaceae*, *Gnomoniaceae* and *Cytosporaceae*. Barr (1978) revised the order *Diaporthales* accepting *Gnomoniaceae* and *Cytosporaceae* in the suborder *Gnomoniineae*. *Melanconidaceae* and *Pseudovalsaceae* were accommodated in the suborder *Melanconidineae*. To differentiate genera, Barr (1978) used characters such as presence or absence of stromata, stromatic development and tissue types, the position of the perithecia and perithecial necks relative to the substrate, as well as ascospore shape; and Monod (1983) distinguished genera within *Gnomoniaceae* based on characters of the stromatic tissues, asexual morphs and ascospores. Three families were recognised in *Diaporthales* by Eriksson (2001), including *Cytosporaceae*, *Melanconidaceae* and *Vialaeaceae*. Based on analysis of LSU nrDNA sequence data, Castlebury *et al*. (2002) accepted *Diaporthaceae*, *Gnomoniaceae*, *Melanconidaceae* and *Cytosporaceae* in *Diaporthales*. *Gnomoniaceae* was revised by several recent studies and new taxa were introduced (Sogonov *et al.* 2008, Walker *et al.* 2010, 2012, Mejía1 *et al.* 2011). Castlebury *et al*. (2002) did not confirm *Vialaeaceae* as a family in *Diaporthales* and therefore excluded it from *Diaporthales*. Réblová *et al.* (2004) introduced *Togniniaceae* to this order based on small subunit (SSU) nrDNA; however, Mostert *et al.* (2006) concluded that its placement was ambiguous based on large subunit (LSU) nrDNA. Maharachchikumbura *et al.* (2015) excluded *Togniniaceae* from *Diaporthales* and accommodated it in *Togniniales*. Gryzenhout *et al*. (2006c) introduced the *Cryphonectria-Endothia* complex as the family *Cryphonectriaceae*. *Sydowiellaceae* and the *Schizoparme-Pilidiella* complex with the genus *Coniella* were introduced as *Schizoparmaceae* in *Diaporthales* (Rossman *et al*. 2007, Alvarez *et al*. 2016). *Harknessiaceae* was introduced into *Diaporthales* accommodating *Harknessia* with wuestneia-like sexual morphs (Crous *et al*. 2012b). *Pseudoplagiostomaceae* was introduced by Cheewangkoon *et al*. (2010) to accommodate *Pseudoplagiostoma*. Voglmayr & Jaklitsch (2014) resurrected *Stilbosporaceae* in *Diaporthales* based on phylogenetic analysis of LSU nrDNA sequence data and transferred the genera *Stegonsporium* and *Stilbospora* to this family. *Macrohilaceae* was introduced by Crous *et al*. (2015), based on an analysis of LSU nrDNA to accommodate *Macrohilum*. Suetrong *et al.* (2015) introduced *Tirisporellaceae* into *Diaporthales*; however, Jones *et al.* (2015) excluded this family from *Diaporthales*. Norphanphoun *et al.* (2016) introduced *Lamproconiaceae* to accommodate *Lamproconium* and *Hercospora*. *Juglanconidaceae* was introduced in the *Diaporthales* by Voglmayr *et al*. (2017). However, molecular data suggest that additional families still remain to be elucidated (Gryzenhout *et al*. 2006c, Crous *et al.* 2012a, 2015, Voglmayr *et al.* 2017). Currently there are 14 families accepted in the *Diaporthales.*

Given the taxonomic discrepancies within *Diaporthales*, the present study uses a combined taxonomic approach based on morphology and DNA sequence analyses of the partial 28S nrDNA (LSU), the internal transcribed spacer regions and intervening 5.8S nrDNA (ITS), DNA-directed RNA polymerase II second largest subunit (*rpb2*), and translation elongation factor 1-alpha (*tef1*) gene regions to investigate phylogenetic relationships of all genera in *Diaporthales* to update their classification. All taxonomic novelties and present taxonomic families are re-described and illustrated where necessary. We also present new data on each family to provide a better taxonomic understanding.

MATERIALS AND METHODS

Isolates and specimens

Specimens were collected from Germany, Italy, Russia, Thailand and the UK. They were placed in paper bags and collection details noted. Specimens were brought to the laboratory in Zip-lock plastic bags and examined with a Motic SMZ 168 stereomicroscope. Rehydrated fruiting bodies were used to observe morphological characteristics of ascomata, asci, ascospores and other tissues and characters were photographed with a Canon 550D digital camera fitted to the Nikon ECLIPSE 80i compound microscope. Photomicrographs were arranged with Adobe Photoshop v. CS6 and all measurements were made with Tarosoft v. 0.9.0.7. Specimens were preserved and are deposited at the BBH and MFLU fungaria. Taxonomic novelties and descriptions were deposited in MycoBank (Crous *et al*. 2004), and new species were established using modern criteria and standards (Taylor *et al.* 2000, Seifert & Rossman 2010, Jeewon & Hyde 2016).

Sporocarps were removed from the substrate using a sterilised needle and placed in a few drops of sterilised distilled water on a sterilised cavity slide and a spore suspension was prepared as described in Chomnunti *et al*. (2014). Germinating ascospores were aseptically transferred to Petri dishes containing Potato Dextrose Agar (PDA) or Malt Extract Agar (MEA) (Crous *et al*. 2009). Colonies were photographed and characters were noted. Colony colour on PDA and MEA was determined with the colour charts of Rayner (1970). Living cultures are deposited at Mae Fah Luang University (MFLU) and the Westerdijk Fungal Biodiversity Institute (CBS) culture collections. Autoclaved pine needles were placed on water agar (WA) to observe conidiomatal development and sporulating (Crous *et al.* 2009).

Types and other relevant authentic specimens were loaned from accessible fungaria [New York State Museum (NY), Naturhistorisches Museum Wien (W), Swedish Museum of Natural History (S), Royal Botanic Gardens, Kew (K), Universität Wien (WU)]. A small part of the fungarium specimen was cut and rehydrated in water or 5 % KOH. Micro-morphological characters were observed from rehydrated ascomata and photography was done as previously described.

DNA extraction, PCR amplification and phylogeny

Fresh fungal mycelia grown on MEA for 4 wk at 18 °C was scraped from the colony margin and sometimes perithecial content of fresh specimens were used for genomic DNA extraction following the protocol outlined by Jeewon *et al*. (2002). PCR amplification and sequencing of the LSU nrDNA region using the primer pair LROR/LR5 (Rehner & Samuels 1994, Vilgalys & Hester 1990), ITS nrDNA region using primer pair ITS5/ITS4 (White *et al*. 1990), *rpb2* region using the primer pair fRPB2-5F/fRPB2-7cR (Liu *et al*. 1999), and *tef1* region using primer pair EF1-728F/EF1-986R (Carbone & Kohn 1999) were performed.

Each amplification reaction contained 0.125 µL of 5 units/µL Ex-Taq DNA polymerase (TaKaRa), 2.5 µL of 10 × PCR buffer, 2 µL of 2mM $MgCl_2$, 2.5 µL of 2 mM dNTPs, 1 µL of 0.2–1.0 µM primer, <500 ng DNA template and was adjusted with double-distilled water to a total volume of 25 mL. Amplification reactions were performed in a thermal-cycler (BIORAD 1000^{TM} Thermal Cycler, Bio-Rad Laboratories, Hercules, California). The temperature profile for both ITS nrDNA and LSU nrDNA was an initial denaturing step for 2 min at 94 °C, followed by 35 amplification cycles of denaturation at 94 °C for 60 s, annealing at 58 °C for 60 s and extension at 72 °C for 90 s and a final extension step of 72 °C for 10 min (Phillips *et al*. 2008). The temperature profile for the *rpb2* was: initial denaturation at 94 °C for 120 s, followed by 35 amplification cycles of denaturation at 95 °C for 45 s, annealing at 57 °C for 50 s and extension at 72 °C for 90 s (Liu *et al*. 1999). The temperature profile for *tef1* was: initial denaturation at 94 °C for 120 s, followed by 35 amplification cycles of denaturation at 95 °C for 30 s, 58 °C for 50 s, 72 °C 60 s (Glass & Donaldson 1995). All PCR products with a DNA ladder were determined by electrophoresis at 120 V/cm for 20 min in 1 % agarose gel stained with ethidium bromide (0.5 mg/mL). The gel was visualised under a UV transilluminator to estimate the fragment size. PCR products were purified and sequenced with both primers at the Sunbiotech Company, Beijing, China. Sequences were edited and consensed with DNASTAR Lasergene v. 7.1. The sequences generated in this study were supplemented with additional sequences obtained from GenBank (Table 1) based on blast searches and published literature. Multiple sequence alignments were generated with MAFFT v. 7 (http://mafft.cbrc.jp/alignment/server/index.html) and the alignment was manually improved with BioEdit v. 7.0.5.2 (Hall 1999).

Maximum likelihood analysis (ML) was performed by RAxMl GUI v. 1.3 (Stamatakis *et al*. 2008, Silvestro & Michalak 2012). The search strategy was set to rapid bootstrapping and the analysis was carried out with 1 000 replicates using the GTRGAMMAI model of nucleotide substitution, which was the best model predicted for the concatenated LSU nrDNA, ITS nrDNA, *rpb2* and *tef1* alignment by MrModeltest v. 2.3 (Nylander 2004).

For the Bayesian analyses (BI) of the individual loci and concatenated LSU nrDNA, ITS nrDNA, *rpb2* and *tef1* alignment, MrModeltest v. 2.3 (Nylander 2004) was used to determine the best nucleotide substitution model settings for MrBayes. A dirichlet state frequency was predicted for all four data partitions and GTR+I+G as best model for LSU nrDNA, ITS nrDNA, and *rpb2*; for *tef1* the best model was GTR+G. The heating parameter was set to 0.2 and trees were saved every 1 000 generations (Ronquist *et al*. 2012). The Markov Chain Monte Carlo (MCMC) analysis of four chains started in parallel from a random tree topology.

The maximum parsimony analysis (MP) was performed with PAUP v. 4.0b10 (Swofford 2003). Ambiguously aligned regions were excluded and all characters were unordered and given equal weight. Alignment gaps were treated as a fifth character state. Trees were inferred using the heuristic search option with TBR branch swapping and 100 random sequence additions. MaxTrees were set to 1 000, branches of zero length were collapsed and all multiple parsimonious trees were saved. Tree length (TL), consistency index (CI), retention index (RI), rescaled consistency index (RC), homoplasy index (HI), and log likelihood (-ln L) were calculated for trees generated under different optimality criteria. The robustness of the most parsimonious trees was evaluated by 1 000 bootstrap replications resulting from the maximum parsimony analysis, each with 10 replicates of random step-wise addition of taxa (Felsenstein 1985). The Kishino-Hasegawa tests (Kishino & Hasegawa 1989) were performed to determine whether the trees inferred under different optimality criteria were significantly different.

Trees were viewed in FigTree v. 1.4.3 (Rambaut 2007). The final alignments and the trees obtained were deposited in TreeBASE (http://purl.org/phylo/treebase/phylows/study/TB2:S21148) and are available under study accession no. S21148.

RESULTS

To reveal the phylogenetic position of genera, families and genera *incertae sedis* within the order *Diaporthales*, a phylogenetic analysis was performed with LSU nrDNA, ITS nrDNA, *rpb2* and *tef1* sequence data. Sequences of representative species were selected from Maharachchikumbura *et al*. (2016), Norphanphoun *et al*. (2016), Voglmayr *et al*. (2017) and supplemented with sequences from GenBank. The LSU nrDNA, ITS nrDNA, *rpb2*, *tef1* and combined data matrices contained 1 423, 735, 1 064, 427 and 3 652 characters with gaps, respectively. The alignment comprised 310 strains and *Eutypella* sp. (MFLUCC 16–1215) was selected as the outgroup.

The same concatenated alignment was subjected to phylogenetic analyses, including a Bayesian analysis, a maximum parsimony analysis and a maximum likelihood analysis. The concatenated sequence alignment contained 2 027 parsimony-informative characters, 385 were variable and parsimony uninformative and 1 241 were constant. The parsimony analysis yielded the maximum of 1 000 equally most parsimonious trees (TL = 16 973 steps; CI = 0.278; RI = 0.728; RC = 0.202; HI = 0.722). The ML analysis yielded a tree with a likelihood value of ln: -75295.054554 and the following model parameters: alpha: 0.368178; Π(A): 0.246723, Π(C): 0.249231, Π(G): 0.277805, and Π(T): 0.226241. The Bayesian analysis lasted 72 151 000 generations (average standard deviation of split frequencies value = 0. 016671) and the consensus trees and posterior possibilities were calculated from the 103 301 trees in each of the two run files, of which a total of 72 152 trees in each of the two run files, of which a total of 108 228 were sampled after discarding the first 25 % of generations for burn-in. The different data partitions contained 787, 529, 761 and 390 unique site patterns (LSU nrDNA, ITS nrDNA, *rpb2* and *tef1*, respectively).

The phylogeny resulting from the analysis of combined gene sequence data is shown in Fig. 1. Overall, the topologies obtained from the different phylogenetic analyses were mostly similar and the best scoring RAxML tree is illustrated here. The bootstrap support values of maximum likelihood analysis (MLB), maximum parsimony analysis (MPB) and Bayesian posterior probability scores (PP) are noted at the nodes. The separation of *Diaporthales* from other *Sordariomycetes* taxa is well-supported (MLB/MPB/PP = 100/96/1). The order separates into 21 familial clades with good support values and two genera *incertae sedis* clades labeled as 5 and 18.

Clade 1 is represented by *Gnomoniaceae* with moderate support values (MLB/MPB/PP = 60/--/0.9) and comprised *Alnecium*, *Ambarignomonia*, *Amphiporthe*, *Anisogramma*, *Apiognomonia*, *Apioplagiostoma*, *Asteroma*, *Cryptodiaporthe*, *Cryptosporella*, *Discula*, *Ditopella*, *Ditopellopsis*, *Gnomonia*, *Gnomoniella*, *Gnomoniopsis*, *Mamianiella*, *Marsupiomyces*, *Occultocarpon*, *Ophiognomonia*, *Phragmoporthe*, *Plagiostoma*, *Pleuroceras*, *Sirococcus* and *Valsalnicola*. *Anisogramma* and *Mamianiella* formed a distinct clade with high support value. Morphologically they are similar and these genera appear to be congeneric. Therefore we synonymise *Anisogramma* under *Mamianiella* giving priority to the older name and its taxonomic stability. In addition, *Mamianiella* is nested in between *Anisogramma* species and this supports that both genera should be synonymised. Here we introduce one new genus and six new species to *Gnomoniaceae*. We introduce *Plagiostoma salicicola* based on morphology and phylogeny. *Plagiostoma jonesii*, the second species, was a fully-supported clade sister to *Plagiostoma salicellum*, *P. dilatatum* and *P. salicicola*. It is morphologically distinct from other species in *Plagiostoma*. Sequences of the asexual morph of *Apiognomonia veneta* (= *Discula nervisequa*) is included here and clustered with other *Apiognomonia veneta* strains. *Ditopella biseptata* is introduced based on phylogeny as well as morphology. *Ditopella biseptata* formed a fully-supported clade sister to *D. ditopa.* We introduce a new genus *Marsupiomyces* with two phylogenetically well-supported species, *M. quercina* and *M. epidermoidea. Gnomoniopsis agrimoniae* represents a new species distinct from other species of *Gnomoniopsis.*

Clade 2 is represented by *Melanconidaceae sensu stricto* with good support values (MLB/MPB/PP = 93/91/0.9) and it is considered as *Melanconidaceae.* Most genera listed under *Melanconidaceae* in recent publications are excluded from this family, based on morphology and available sequence data. We introduce a new *Melanconis* species as *M. italica.*

Clade 3 (MLB/MPB/PP = 100/92/1) represents the new family *Apiosporopsidaceae* which is introduced to accommodate a single genus, *Apiosporopsis.*

Clade 4 is represented by *Juglanconidaceae* (MLB/MPB/PP =99/94/1), which was recently introduced by Voglmayr *et al*. (2017) based on a fungal species isolated from *Juglans nigra*.

Clade 5 is represented by *Diaporthella* species with low bootstrap support and is considered here as *Diaporthales* genera *incertae sedis*, pending the availability of sequence data for the type species *Diaporthella aristata*.

The family *Cryphonectriaceae* is represented by Clade 6 which is phylogenetically poorly-supported (MLB/MPB/PP = 63/--/0.9) but morphologically distinct from other families in *Diaporthales*. Almost all taxa in this family have molecular data.

Clade 7 is represented by the *Harknessiaceae*, which is phylogenetically poorly-supported (MLB/MPB/PP = 60/68/--). Species of *Harknessia* and wuestneia-like sexual morphs have been linked by morphological characteristics (Crous & Rogers 2001, Crous *et al*. 2012b), but the types of both genera have not been linked by molecular data. *Dwiroopa lythri* clusters basal to *Harknessia* species with low support values (MLB/MPB/PP = 60/68/--; Fig. 1).

Schizoparmaceae (Clade 8) is phylogenetically well-supported (MLB/MPB/PP = 94/88/--). We introduce a new *Coniella* species as *Coniella pseudokoreana* and it clusters sister to *Coniella straminea*.

Clade 9 (MLB/MPB/PP = 91/71/1) represents the new family *Erythrogloeaceae* which is introduced in this study to accommodate *Chrysocrypta*, *Disculoides* and *Erythrogloeum.*

Clade 10 (MLB/MPB/PP = 93/--/1) currently encompassies 6 genera within the *Melanconiellaceae*. In particular, *Melanconiella* sisters to *Microascospora* where as *Greeneria* is nested in between *Dicarpella* and *Tubakia*. *Microascospora* is introduced here based on *Microascospora rubi* collected from Italy and *Microascospora fragariae* (= *Sphaeronaemella fragariae*) which was already placed in *Microascales*. Other genera were previously placed in *Melanconidaceae*, but phylogenetically they do not cluster with *M. stilbostoma*, which is the family type of the *Melanconidaceae*. *Dicarpella* and *Tubakia* form a distinct clade within this family to represent both genera as holomorphs. *Greeneria saprophytica* is distant from *Greeneria uvicola*, which is the type of this genus. We introduce a new *Tubakia* species as *T. thailandensis.* A new genus *Microascospora* based on *M. rubi* is introduced here and *M. rubi* strains have high support as a distinct species. *Microascospora rubi* forms a sister clade to *Microascospora fragariae* (= *Sphaeronaemella fragariae*) and high bootstrap support values confirmed it as a species. In addition, we include sequences of *Melanconiella chrysodiscosporina* and *M. chrysomelanconium* from recently collected specimens.

Clade 11 is represented by the monotypic family *Auratiopycnidiellaceae*, which is newly introduced in this study based on *Auratiopycnidiella tristaniopsis*, and it is morphologically and phylogenetically well-supported (MLB/MPB/PP = 95/--/1).

Clade 12 comprises the monotypic family *Pseudoplagiostomaceae* with full-support (MLB/MPB/PP = 100/100/1).

Clade 13 (MLB/MPB/PP = 100/68/1) represents *Apoharknessiaceae* to accommodate *Apoharknessia* and *Lasmenia*.

Clade 14 is represented by the family *Diaporthaceae* with good support (MLB/MPB/PP = 86/91/0.9). We also introduce several new genera such as *Chiangraiomyces* which is typified by *C. bauhiniae*; *Paradiaporthe*, typified by *P. artemisiae* and *Hyaliappendispora* typified by *H. galii*. *Paradiaporthe* is nested with reliable support between *Chiangraiomyces* and *Phaeocytostroma* while *Chiangraiomyces*, clusters sister to *Ophiodiaporthe*. *Hyaliappendispora* grouped sister to *Phaeodiaporthe*. Here we included several new isolates of *Diaporthe* species and *Diaporthe litoricola* forms a fully-supported clade sister to *Diaporthe maytenicola*. In addition, we include a new collection of *Diaporthe eres* and a new collection of *Diaporthe rudis.*

Clade 15 represents the family *Macrohilaceae* with full-support (MLB/MPB/PP = 100/100/0.9).

Clade 16 is represented by *Cytosporaceae* with good support (MLB/MPB/PP = 88/51/1). In addition to *Cytospora*, we include *Waydora* and *Pachytrype* in *Cytosporaceae* based on molecular data. Here we introduce five *Cytospora* species viz., *Cytospora centrivillosa*, *Cytospora fraxini*, *Cytospora junipericola*, *Cytospora quercicola*, and *Cytospora rosae*. *Cytospora centrivillosa* forms a distinct clade that is sister to *Cytospora melanodiscus* and *Cytospora mali*. *Cytospora melanodiscus* is morphologically quite different having 1-septate ascospores. Here we added sequences of *C. salicina* from freshly collected specimens.

Prosopidicolaceae (Clade 17) is introduced to accommodate *Prosopidicola mexicana.*

Phaeoappendicospora thailandensis (Clade 18) forms separate fully-supported (MLB/MPB/PP = 100/100/0.9) clade. It currently does not have a high affinity with any known family in *Diaporthales*, therefore we consider this species as *Diaporthales* genera *incertae sedis.*

Clade 19 represents the family *Stilbosporaceae* that is fully-supported (MLB/MPB/PP = 100/100/1). Although *Crinitospora* is morphologically different from *Stegonsporium* and *Stilbospora*, inclusion of this genus in the family is phylogenetically well-supported.

Clade 20 comprises the family *Coryneaceae* and includes molecular data for *Coryneum arausiaca* collected from Italy. *Coryneum arausiaca* has high support (MLB/PP = 100/96/1) as a separate species.

Clade 21 represents the family *Sydowiellaceae* with very good support (MLB/MPB/PP = 98/79/1) and here we introduce a new species *Sydowiella urticicola*. *Sydowiella urticicola* clade received high support values.

Lamproconiaceae is represented by clade 22 and comprises *Lamproconium* and *Hercospora*.

The new family *Asterosporiaceae* (23) is introduced to accommodate *Asterosporium asterospermum*. This monogeneric family received high support (MLB/MPB/PP = 100/96/1) and is sister to the *Sydowiellaceae* and *Lamproconiaceae*.

Taxonomy

Diaporthales Nannf., Nova Acta R. Soc. Scient. Upsal. 8: 53. 1932.

Saprobic or *pathogenic* in plants, and animals, including humans or inhabiting soil. Sexual morph: *Pseudostromata* or *ascostromata* well-developed, poorly developed or absent, scattered, immersed or erumpent, solitary to aggregated, valsoid to diatrypoid, broadly elliptical, oval to circular from above, yellowish orange, pale brown, dark brown to black, some species turning purple or umber in KOH. *Entostroma* normally limited to the region near the perithecial walls, prosenchymatous, pale-coloured, and slightly differentiated from the surrounding bark tissue. *Ectostromatic disc* well- or poorly developed, subhyaline, yellowish white, pale brown, rarely dark brown to black, pulvinate, flat or slightly convex, orbicular, circular or somewhat irregular, with or without black zone or a crust consisting of fungus tissue, sclerotioid, coriaceous. *Central column* present or absent, if present beneath the disc more or less conical, comprising hyaline or pigmented hyphae mixed with a pigmented, cream, yellow, olive, brownish or grey, powdery amorphous substance. *Ascomata* perithecial, scattered, solitary or aggregated, immersed to erumpent, rarely superficial, globose to subglobose, sometimes circinate, arranged in a valsoid to diatrypoid configuration or single, coriaceous, sometimes with plate-like ornamentation around ostiole, black to brown, ostiolate, papillate. *Papilla* lacking or upright, long or short, one or more, central or eccentric, slanted to horizontal on host tissue, sometimes converging, with neck swollen at the tips, fuscous black to umber, ostiole with hyaline periphyses. *Peridium* thin or thick, comprising outer, dark, thick-walled, cells of *textura angularis* and inner, mostly small, hyaline, thin-walled, flattened cells of *textura angularis*. *Hamathecium* aparaphysate or comprising few broad cellular, filiform to cylindrical, septate to aseptate, branched to unbranched, hyaline paraphyses and sometimes parenchymatous cells attached at the base and asci dissolving at maturity. *Asci* generally 2–32-spored, unitunicate, ellipsoid, cylindrical, fusiform, clavate, oblong-clavate, broadly fusoid to cylindrical-fusoid, short pedicellate, apex blunt, usually with distinct, J-refractive ring. *Ascospores* overlapping uniseriate, biseriate, partially biseriate to fasciculately arrange, ovoid, ellipsoid, oblong, fusoid, cylindrical, filamentous or allantoid, aseptate to multi-septate, rarely distoseptate, constricted or not at the septa, hyaline, olivaceous to brown, smooth- to sometimes ornamented walled, ends mostly rounded, rarely pointed, multi-guttulate, straight or curved, smooth- to sometimes ornamented walled to rarely ornamented, hyaline to dark brown. *Appendages* absent or present; if present, apical or basal, subulate, navicular or whip-shaped, smooth, hyaline. Asexual morph: Coelomycetous. *Stroma* present or absent, immersed to superficial, opening by irregular rupture, globose, subglobose to irregular, solitary to gregarious, orange, brown to dark brown, sometimes loculate. *Conidiomata* amphigenous, eustromatic, punctiform, pycnidial or acervular, sometimes pyriform in section and divided into compartments by bending of peridium, subcuticular, peridermal or subepidermal, brown to black or orange with dark brown border, sometimes with a central, well-developed, pale brown, pseudoparenchymatous layer, becoming thinner or absent at the margin of the conidiomata, sometimes with pale coloured, ectostromatic disc and central column or with radiate scutella. *Scutella* convex, membranous, brown, somewhat translucent, with a central hyaline or pale disc, giving rise to radiating hyphae, thick-walled cells radiating from a central point, rounded to pointed at the tips. *Peridium* comprising pale to dark brown cells of *textura angularis* to *textura globulosa*. *Paraphyses* present or absent. If present, hyaline, cellular, subcylindrical, branched or not, with obtuse apex, septate, constricted at septa. *Conidiophores* reduced to conidiogenous cells or arising from the upper most cells of basal and parietal tissue or under the developing scutellum, densely aggregated or few, filiform, fusiform, cylindrical to globose, simple or branched, septate or aseptate, sometimes septate only at the base, smooth, hyaline or hyaline at the top, pale brown at the base, sometimes dimorphic. *Alpha conidiophores* tightly aggregated, subcylindrical, branched in mid region, consisting of few supporting cells, giving rise to septate, ampulliform, cylindrical to irregular conidiogenous cells or paraphyses, straight to sinuous, septate, cylindrical, hyaline to pale brown, branched only at the base, smooth, formed from the innermost layer cells of the conidiomatal wall, sometimes with terminal and lateral apex, with minute periclinal thickening and collarette. *Beta conidiophores* interspersed among alpha conidiophores, hyaline, subcylindrical, branched, septate. *Conidiogenous cells* lining the inner cavity of conidioma, enteroblastic to holoblastic, annellidic or phialidic, discrete or integrated, hyaline to olivaceous, smooth, lageniform, subcylindrical to ampulliform, with terminal truncate locus, simple or branched, proliferating several times percurrently near apex, with flaring collarettes or apex truncate, with minute periclinal thickening or terminal truncate locus. *Conidia* broadly ellipsoid, oval, obovoid, allantoid, fusoid to sigmoid, sinuate to slightly angular, hyaline to brown, hyaline when immature, becoming medium brown to dark brown at maturity, smooth-walled, guttulate, aseptate to septate or distoseptate, apex obtuse, base truncate with a visible scar or a flat protruding scar at the base, sometimes the apical and basal cell darker than other cells or with hyaline tip in apical cell, sometimes with or without a longitudinal germ slit, sometimes with marginal frill or becoming golden brown at germination, with solitary, brown, wavy germ tubes.

Notes: The order *Diaporthales* was introduced to accommodate "true" diaportheen taxa and Eriksson & Winka (1997) accommodated *Diaporthales* in *Sordariomycetidae*. Barr (1978), Monad (1983), Castlebury *et al*. (2002), Rossman *et al*. (2007), Maharachchikumbura *et al*. (2015, 2016), Rossman *et al*. (2015) and Voglmayr *et al*. (2017) clarified the taxonomic and phylogenetic concepts. Maharachchikumbura *et al*. (2015) introduced the subclass *Diaporthomycetidae* to accommodate the order *Diaporthales*. Morphologically and phylogenetically this is a well-supported order comprising *Apiosporopsidaceae*, *Apoharknessiaceae*, *Asterosporiaceae*, *Auratiopycnidiellaceae*, *Coryneaceae*, *Cryphonectriaceae*, *Cytosporaceae*, *Diaporthaceae*, *Erythrogloeaceae*, *Gnomoniaceae*, *Harknessiaceae*, *Juglanconidaceae*, *Lamproconiaceae*, *Macrohilaceae*, *Melanconidaceae*, *Melanconiellaceae*, *Prosopidicolaceae*, *Pseudoplagiostomaceae*, *Schizoparmaceae*, *Stilbosporaceae*, and *Sydowiellaceae.*

Apiosporopsidaceae Senan., Maharachch. & K.D. Hyde, **fam. nov.** MycoBank MB821538. Facesoffungi number FoF03455. Clade 3.

Parasitic on living leaves and twigs. Sexual morph: *Ascomata* scattered, black, oval to almost spherical, immersed in the leaf tissue beneath a thin, well-developed clypeus, neck lacking or only slightly papillate, periphysate. *Peridium* comprises 5–6 outer layers of dark, thick-walled cells of *textura angularis* and inner, thin-walled, strongly flattened cells of *textura angularis*. *Hamathecium* aparaphysate. *Asci* 8-spored, unitunicate, short-pedicellate, apex blunt with J- apical ring. *Ascospores* 1–2-seriate, elliptical to fusoid, often slightly flattened on one side, unicellular, hyaline. Asexual morph: Coelomycetous. *Stroma* loculate, globose to irregular, sometimes with beaks. *Conidiogenous cells* phialidic, short to elongate, simple or branched. *Conidia* oblong or cylindrical to allantoid, 1-celled, hyaline.

Type genus: Apiosporopsis (Traverso) Mariani.

Type species: Apiosporopsis saccardoana Mariani.

Apiosporopsis carpinea (Fr.) Mariani, Atti Soc. ital. Sci. nat. (Modena) 50: 165. 1911. Facesoffungi number FoF03456. Fig. 2.
Basionym: *Xyloma carpini* Fr., Observ. mycol. (Havniae) 2: 363. 1818.

Illustration: For asexual morph see Potebnia (1910).

Saprobic on over-wintered plants. Sexual morph: *Clypeus* 70–140 µm wide, 50–70 µm high, slight, prosenchymatous. *Ascomata* 112–250 µm diam, 140–170 µm high, globose or depressed, immersed, usually hypophyllous, apapillate, apex rounded with plane pore or short papillate or conic. *Peridium* 10–20 µm wide, comprising thick-walled, brown cells of *textura angularis*. *Asci* 40–75 × 8–14 µm, 8-spored, unitunicate, cylindrical, sessile, apical ring bilobed, distinct, shallow. *Ascospores* 10–15 × 3.5–6.5 µm, overlapping uniseriate, ellipsoid, ovoid or fusoid, straight or often inequilateral, guttulate, hyaline, aseptate. Asexual morph: *Conidiomata* acervular, superficial, black, coriaceous. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 5–10 µm long, conical, wide, aseptate, hyaline. *Conidia* 12–15 × 8–9 µm, oblong to ellipsoid, hyaline, aseptate, with two small guttules (description of asexual morph from Potebnia 1910).

Material examined: **Austria**, Sonntagberg, New Rosenau, July, on leaves of *Carpinus betulus* (*Betulaceae*), P.P. Strasser, IMI 11662.

Notes: Traverso (1907) erected *Apiosporopsis* as a subgenus of *Guignardia* to accommodate *Guignardia carpinea* and *G. veneta* based on their distinct morphological characters. Mariani (1911) raised *Apiosporopsis* to generic rank describing *A. saccardiana* as a third species. Von Höhnel (1917) proposed *Sphaerognomonia* to accommodate *Apiosporopsis carpinea.* Reid & Dowser (1990) evaluated this genus and proposed *Apiosporopsis* as the correct name for *Sphaerognomonia*, retaining the type species as *Apiosporopsis carpinea*. Index Fungorum (2017) and MycoBank (2017) list another two species of *Apiosporopsis* as *A. saccardoana* and *A. coronillae*.

Apiosporopsis carpinea was recorded only on over-wintered living leaves. *Gloeosporium robergei* was reported as the asexual morph of *A. carpinea* (Potebnia 1910, Treigien & Markovska 2007). However, there are no molecular data to prove this. *Gloeosporium robergei* was reported as the causal agent of bud mortality and twig cankers on *Ostrya virginiana* (Sinclair & Hudler 1980). Sequences of this species (CBS 617.72 and CBS 738.68) placed the genus in the *Diaporthales*, but not in the *Gnomoniaceae* or *Melanconidaceae* (Sogonov *et al*. 2008). The molecular analysis of this study revealed that *Apiosporopsis* species formed a separate, well-supported clade (Fig. 1, Clade 3). Morphologically this clade is distinct from other families of *Diaporthales* having ascospores with pseudo-septate, sharply pointed ends, sessile unitunicate asci with a bilobed apical ring, and apapillate, immersed ascomata. Hence, we introduce the family *Apiosporopsidaceae* to accommodate these species.

Apoharknessiaceae Senan., Maharachch. & K.D. Hyde, **fam. nov.** MycoBank MB821881. Facesoffungi number FoF03457. Clade 13.

Endophytic, saprobic or pathogenic. Sexual morph: Undetermined. Asexual morph: *Conidiomata* stromatic or eustromatic, subepidermal to immersed, solitary to gregarious, subglobose to irregular, unilocular, pale brown. *Conidiomata wall* outer layer composed of thin-walled, pale brown cells of *textura angularis*, inner layer pale yellow to hyaline. *Conidiophores* reduced to conidiogenous cells or hyaline, septate, cylindrical, and sparingly branched. *Conidiogenous cells* holoblastic, cylindrical, lageniform to ampulliform, hyaline, smooth, invested in mucus. *Conidia* obclavate, conical, aseptate, pale brown, with a longitudinal band on the flat surface, thick and smooth-walled, guttulate, with short hyaline apiculus, with small globule of mucus on base or obtuse apex with a scar at the base.

Type genus: *Apoharknessia* Crous & S.J. Lee.

Type species: *Apoharknessia insueta* (B. Sutton) Crous & S.J. Lee.

Notes: *Apoharknessia* displays similar morphological characters to *Harknessia* but differs in having a hyaline, apical apiculus. Nag Raj (1993) listed *Mastigonetron*, as a synonym for *Harknessia*. *Mastigonetron* is typified by *M. fuscum* (= *H. insueta*). However, this species has a *Wuestneia* sexual morph, *W. fusca*, and it does not cluster with other *Harknessia* species. Therefore, *Apoharknessia* was introduced to accommodate *H. insueta* (Lee *et al*. 2004). The genus *Apoharknessia* presently accommodates two species (Crous *et al.* 2017).

Lasmenia species cause rachis necrosis, flower abortion and necrotic spots on leaves of *Nephelium lappaceum*. Several *Lasmenia* species associated with tropical fruits as pathogens have been isolated. DNA-based studies report a close affinity of *Lasmenia* to *Cryphonectriaceae* (Serrato-Diaz *et al*. 2011). *Lasmenia* was introduced in 1886 without designating any type species and *L. balansae* was selected as the lectotype species by von Höhnel (1910). There are 12 species recorded under *Lasmenia* in Index Fungorum (2017). *Lasmenia* species are reported as the causative agents of rachis necrosis, flower abortion, fruit rot, and leaf spots on *Nephelium lappaceum* (Serrato-Diaz *et al*. 2011). A few species have been transferred to *Lasmeniella*, but some species remain doubtful.

Phylogenetic analysis in the present study indicates that *Apoharknessia* and *Lasmenia* clearly belong to the *Diaporthales* in a well-supported clade (Fig. 1, Clade 13). However, the sequences of *Lasmenia* which are included in this study are not of a known species and given the sparse taxa in this family, any affinity between the two genera can not be ascertained.

Hence, we introduce a new family *Apoharknessiaceae* to accommodate these two genera. Morphologically species of this clade are distinct from other families of *Diaporthales* in having eustromatic to stromatic pycnidial conidiomata, blastic or phialidic conidiogenesis and ellipsoid to conical conidia with a longitudinal band on the flat surface or small globule of mucus at the base.

Apoharknessia insueta (B. Sutton) Crous & S.J. Lee, Stud. Mycol. 50: 240. 2004. Facesoffungi number FoF03458.

Illustration: See Lee *et al.* (2004).

Foliicolous forming bleached spots or saprobic on various substrates. Sexual morph: Undetermined. Asexual morph: *Conidiomata* stromatic, subepidermal to immersed, solitary to gregarious, subglobose to irregular, unilocular, pale brown. *Conidiomata wall* outer layer composed of thin-walled, pale brown cells of *textura angularis*, inner layer pale yellow to hyaline. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 5–15 × 4–6 µm ($\bar{x}$ = 9 × 4.8 µm), lageniform to ampulliform, hyaline, smooth, invested in mucus. *Conidia* 10–12 × 7.5–9 µm ($\bar{x}$ = 10.5 × 8 µm), conical, aseptate, brown, with a longitudinal band on the flat surface, thick and smooth-walled, guttulate, with short hyaline apiculus, with small globule of mucus on base. *Basal* *appendage* 2 × 1–1.5 µm, often gelatinising and resulting in a minute marginal frill on the truncate base of the conidia (description based on Nag Raj 1993).

Notes: *Apoharknessia* was introduced and typified by *Apoharknessia insueta* and it clustered distant from *Harknessia sensu stricto* (Clade 7) (Lee *et al.* 2004). *Apoharknessia* is morphologically similar to *Harknessia* but distinct in having a hyaline apical apiculus in conidia and cultures on oatmeal or malt extract agar not forming fluffy aerial mycelium. In addition, it grows within the medium and sporulates directly on hyphae without forming conidiomata. Crous *et al*. (2017) introduced a new species as *Apoharknessia eucalyptorum*.

Asterosporiaceae Senan. Maharachch. & K.D. Hyde, **fam. nov.** MycoBank MB821539. Facesoffungi number FoF03459. Clade 23.

Endophytic or saprobic on *Betulaceae*, *Fagaceae*, *Juglandaceae* and *Sapindaceae*. Sexual morph: Undetermined. Asexual morph: *Conidiomata* acervular, subepidermal, erumpent at maturity, solitary, or occasionally confluent, unilocular, dark brown to black. *Conidiomata wall* composed of thin-walled, brown cells of *textura angularis*. *Conidiophores* cylindrical, branched at the base, septate, hyaline to pale brown. *Conidiogenous cells* holoblastic, cylindrical, unbranched, integrated, determinate, hyaline to pale brown, smooth. *Conidia* terminal, transversely distoseptate, consisting of four arms, with reduced lumina, brown, smooth-walled.

Type genus: *Asterosporium* Kunze.

Type species: *Asterosporium hoffmannii* Kunze.

Notes: A molecular phylogenetic analysis based on SSU nrDNA, LSU nrDNA, ITS nrDNA and beta-tubulin positions *Asterosporium* species within *Sordariomycetes* (Tanaka *et al*. 2010). Wijayawardene *et al*. (2016) showed that *Asterosporium* species are related to *Diaporthales* forming a sister clade to species in *Sydowiellaceae* based on combined ITS nrDNA and LSU nrDNA sequence analyses. In this study, *Asterosporium* species are positioned in *Diaporthales* (Fig. 1, Clade 23) and constitute a well-supported sister clade to *Sydowiellaceae* and *Lamproconiaceae.* Morphologically, *Asterosporium* species are distinct from other members of *Diaporthales* in having star-like, brown conidia. Hence, we introduce a novel family *Asterosporiaceae* to accommodate *Asterosporium* species. We illustrate *Asterosporium asterospermum* collected from Italy.

Asterosporium asterospermum (Pers.) Hughes, Canad. J. Bot. 36: 738. 1958. Fig. 3.
Basionym: Stilbospora asterosperma Pers. [as *'asterospora'*], Syn. meth. fung. (Göttingen) 1: 96. 1801.

Saprobic on twigs and branches of *Fagus sylvatica.* Sexual morph: Undetermined. Asexual morph: *Conidiomata* 2–2.5 mm high, 0.8–1 mm diam (x̄ = 2.1 × 0.86 mm, n = 15), acervular, subepidermal, erumpent at maturity, solitary, or occasionally confluent, unilocular, dark brown to black. *Conidiomata wall* 25–30 µm (x̄ = 29, n = 20), composed of thin-walled, brown cells of *textura angularis*. *Conidiophores* 30–35 µm high, 5–8 µm wide (x̄ = 29 × 7 µm, n = 20), cylindrical, branched at the base, septate, hyaline to pale brown. *Conidiogenous cells* 70–100 µm high, 4–7 µm wide (x̄ = 80 × 5 µm, n = 20), holoblastic, cylindrical, unbranched, integrated, determinate, hyaline to pale brown, smooth-walled. *Conidia* 65–75 × 90–115 µm (x̄ = 68 × 100 µm, n = 20), terminal, transversely distoseptate, consisting of four arms, with reduced lumina, brown, smooth-walled.

Specimen examined: **Italy**, Forlì-Cesena Province, Santa Sofia, near Passo la Calla, on dead branch of *Fagus sylvatica* (*Fagaceae*), 29 Sep. 2012, E. Camporesi, IT 805, MFLU 15-3555, HKAS 92536.

Notes: *Asterosporium* was introduced and typified by *Asterosporium asterospermum* (= *Stilbospora asterosperma* and *Asterosporium hoffmannii*) and there are five species listed in Index Fungorum (2017), namely *A. acerinum*, *A. asterospermum*, *A. attenuatum, A. hoffmannii* and *A. strobilorum*. However, only *A. asterospermum* has DNA sequence data in GenBank. There are no records for the sexual morph of *Asterosporium* (Tanaka *et al*. 2010). Species of this genus are associated with twigs and stems of overwintered plants as endophytes.

Auratiopycnidiellaceae Senan., Maharachch. & K.D. Hyde, **fam. nov.** MycoBank MB821540. Facesoffungi number FoF03460. Clade 11.

Folicolous. Sexual morph: Undetermined. Asexual morph: *Conidiomata* amphigenous, pycnidia, globose, orange on leaves with dark brown border. *Peridium* comprises pale brown cells of *textura angularis.*

Paraphyses hyaline, cellular, subcylindrical, branched or not, with obtuse apex, septate, constricted at septa. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* hyaline, smooth, lageniform to ampulliform, with terminal truncate locus, thick-walled, sometimes appearing to proliferate percurrently. *Conidia* ellipsoid, smooth, solitary, median 1-septate, constricted at septum, apex obtuse, base truncate, thickened, at times with marginal frill, becoming golden brown at germination with solitary, brown, wavy germ tubes.

Type genus: *Auratiopycnidiella* Crous & Summerell.

Type species: *Auratiopycnidiella tristaniopsidis* Crous & Summerell.

Notes: Crous *et al*. (2012a) described *Auratiopycnidiella* as a genus with subepidermal, orange, pycnidial conidiomata, forming hyaline, holoblastic conidiogenous cells, with or without a thickened scar and hyaline, ellipsoid, 1-septate conidia having a thickened hilum or minute marginal frill. Crous *et al*. (2012a) reported that the genus is phylogenetically distant to *Melanconidaceae* based on LSU nrDNA sequence data and treated this genus as *Diaporthales* genera *incertae sedis* pending the availability of more molecular data. A megablast search of NCBI's GenBank nucleotide database using the calmodulin, ITS nrDNA, and beta-tubulin sequences retrieved sequence similarities with *Harknessiaceae* and *Cryphonectriaceae* (Crous *et al*. 2012a). Our phylogenies generated herein indicate that *Auratiopycnidiella* forms a single branch which is phylogenetically distinct from all other included families (Fig. 1, Clade 11) and hence we introduce *Auratiopycnidiellaceae* to accommodate *Auratiopycnidiella*. *Auratiopycnidiella* currently comprises a single species with a single isolate.

Auratiopycnidiella tristaniopsidis Crous & Summerell [as '*tristaniopsis*'], Persoonia 28: 69. 2012. Facesoffungi number FoF03461.

Illustration: See Crous *et al*. (2012a).

Folicolous. Sexual morph: Undetermined. Asexual morph: *Conidiomata* up to 200 µm diam, amphigenous, pycnidia, globose, orange on leaves with dark brown border, with irregular central opening. *Peridium* up to 25 µm thick, comprising 4–7 layers of pale brown cells of *textura angularis*. *Paraphyses* hyaline, cellular, subcylindrical, branched or not, with obtuse apex, 2–6-septate, constricted at septa *Conidiophores* 10–25 × 3–6 µm, reduced to conidiogenous cells. *Conidiogenous cells* hyaline, smooth, lageniform to ampulliform, with terminal truncate locus, thick-walled, sometimes appearing to proliferate percurrently. *Conidia* 13–15 × 5–5.5 µm, ellipsoid, smooth, solitary, medially 1-septate, constricted at septum, obtuse at apex, truncate at base, thickened at times with marginal frill, hyaline becoming golden brown during germination with solitary, brown, wavy germ tubes 90° to the long axis of the spore (description based on Crous *et al*. 2012a).

Notes: *Auratiopycnidiella* was introduced and typified by *Auratiopycnidiella tristaniopsis*. This is a monotypic genus comprising only the type species, *A. tristaniopsis. Auratiopycnidiella tristaniopsis* forms leaf spots on its host species. Morphologically this taxon shows some similarities to taxa of the *Cryphonectriaceae* in having orange conidiomata. However, phylogenetically it is distinct from *Cryphonectriaceae.*

Coryneaceae Corda, Icon. fung. (Prague) 3: 36. 1839. Clade 20.
Synonym: *Pseudovalsaceae* M.E. Barr, Mycol. Mem. 7: 151. 1978.

Saprobic on dead wood or pathogenic. Sexual morph: *Stromata* solitary, erumpent, comprising pseudoparenchymatous cells. *Ectostromatic disc* well or poorly developed, brown to black, comprising small cells of *textura prismatica* cells. *Ascomata* perithecial, arranged in valsoid configuration, immersed, aggregated, globose to subglobose, coriaceous, brown to black, papillate, ostiolate. *Papilla* upright, central, broad, sometimes converging, comprising brown cells of *textura porrecta*. *Peridium* comprising outer, thick-walled, brown cells of *textura angularis* and inner, thick-walled, hyaline, compressed cells of *textura angularis. Hamathecium* comprising broad, cellular, septate paraphyses, attached to base, longer than asci. *Asci* 8-spored, unitunicate, ellipsoid to cylindrical, thin-walled, pedicellate, apex rounded with a J- apical ring. *Ascospores* overlapping uni- to biseriate, hyaline or initially hyaline, brown at maturity, irregularly fasciculate, ellipsoid, fusoid or elongate, 1–3-septate, often distoseptate, end cells pale brown or hyaline, sometimes end cells pointed, straight or curved not constricted at the septa, guttulate, smooth-walled. Asexual morph: Coelomycetous. *Conidiomata* acervular, solitary, erumpent through the outer periderm layers of host or immersed, scattered, surface tissues above slightly dome-shaped. *Conidiomatal wall* composed of thin-walled, vertically arranged dark brown cells of *textura angularis*. *Conidiophores* branched at the base or not, cylindrical to globose, septate or aseptate, hyaline or hyaline at the apex, pale brown at the base. *Conidiogenous cells* terminal, hyaline, annellidic, cylindrical, sometimes with setulose apical appendages. *Conidia* hyaline to dark brown, curved, broadly fusiform to cylindrical or clavate, smooth-walled, 4–6-distoseptate, sometimes the apical and basal cell darker than other cells with hyaline tip in apical cell.

Type genus: *Coryneum* Nees.

Type species: *Coryneum umbonatum* Nees.

Notes: The family *Coryneaceae* (Fig. 1, Clade 20) was introduced by Corda (1839) based on *Coryneum*. However, Barr (1978) introduced the family *Pseudovalsaceae* based on *Pseudovalsa lanciformis*, which is the sexual morph of *Coryneum umbonatum*. Hence *Pseudovalsaceae* must be synonymised under *Coryneaceae* giving priority to the older name. Rossman *et al*. (2015) protected the earliest name *Coryneum* (1816) over *Pseudovalsa* (1863) and conserved *Coryneum umbonatum* as the type species. This family comprises fungal taxa with upright, erumpent perithecia and central beaks. However, many genera previously included in *Coryneaceae* have been placed in various other families (Castlebury *et al*. 2002) and the only genus remaining in the family is *Coryneum.*

Coryneum arausiaca (Fabre) Senan., Maharachch. & K.D. Hyde, **comb. nov.** MycoBank MB821543. Facesoffungi number FoF03462. Fig. 4.
Basionym: Pseudovalsa arausiaca Fabre, Sphér. Vaucl.: 56. 1883.

Saprobic on branches of *Quercus* sp. Sexual morph: *Stromata* comprising loosely packed, black, hyphae mostly around the neck. *Ascomata* 600–700 µm high, 315–365 µm diam (x̄ = 640 × 340 µm, n = 20), immersed, 5–10 aggregated in one group, visible only as ostiolar opening through cracks in bark, valsoid, globose, brown to black, papillate, ostiolate, ostiole periphysate, periphyses hyaline, long. *Peridium* 25–50 µm (x̄ = 45 µm, n = 10), 10–15 layers of thick-walled, brown-walled cells of *textura angularis* and papilla comprising brown cells of *textura porrecta*. *Paraphyses* 5–10 µm (x̄ = 7.6 µm, n = 20), few, hyaline, septate, attached at base, longer than asci. *Asci* 145–155 × 25–30 µm (x̄ = 146 × 25.6 µm, n = 10), 8-spored, unitunicate, clavate, short pedicellate, apically rounded, narrow, J-, without an obvious apical ring. *Ascospores* 70–90 × 6.5–8.5 µm (x̄ = 77 × 7.5 µm, n = 10), 2–3-seriate, broadly ellipsoidal, ends pointed, 1–3-septate, not constricted at the septa, hyaline, guttulate, smooth-walled. Asexual morph: *Conidiomata* acervular, 1–1.3 mm wide, 0.5–0.55 mm high (x̄ = 1.1 × 0.51 mm, n = 20), solitary, erumpent through the outer periderm layers of host, scattered, surface tissues above slightly domed. *Conidiomatal wall* 100–150 µm (x̄ = 135 µm, n = 20), composed of thin-walled, vertically arranged, dark brown cells of *textura epidermis*. *Conidiophores* 20–35 µm long, 4–7 µm wide (x̄ = 30 × 6 µm, n = 20), branched at the base, cylindrical, septate, hyaline at the top, pale brown at the base. *Conidiogenous cells* 4–7 µm long, 4.5–6 µm wide (x̄ = 6 × 5 µm, n = 20), formed from the apical cell of the conidiophore, holoblastic, cylindrical, hyaline. *Conidia* 42–56 × 13–16 µm (x̄ = 48 × 14 µm, n = 20), curved, broadly fusiform to fusiform-cylindrical or clavate (rather variable in form), dark brown, smooth-walled, 4–6-disto-septate, with apical and basal cells darker than other cells, apical cell with a hyaline tip, truncate and black at base.

Culture characteristics: Ascospores germinating on MEA within 12 h and germ tubes produced from both ends, fast growing on MEA at 25 ºC, after 1 wk reaching 3 cm diam, white, cottony, margin wavy, superficial, slightly effuse, radially striated, edges with more aerial mycelium than centre.

Specimens examined: **Italy**, Province of Forlì-Cesena, Civitella di Romagna, Pian di Spino, on branch of *Quercus* sp. (*Fagaceae*), 25 Mar. 2013, E. Camporesi, IT 1144, (**neotype designated here** MFLU 14–0796, cultures ex-neotype, MFLUCC 13–0658); Province of Forlì-Cesena, Civitella di Romagna, Pian di Spino, on branch of *Quercus* sp. (*Fagaceae*), 16 Feb. 2015, E. Camporesi, IT 1144A, **paraneotype** HKAS83943, cultures ex-paraneotype, MFLUCC 15–1110).

Notes: We have re-collected and neotypified *Pseudovalsa arausiaca*. *Pseudovalsa arausiaca* has immersed, globose perithecia in a valsoid configuration with broadly ellipsoidal, 1–3-septate, hyaline ascospores. The neotype is morphologically identical to *Pseudovalsa arausiaca* described by Fabre (1883). However, we could not locate the type specimens and assume that they are lost. Fortunately, we obtained fresh material from the same host genus and location. Therefore, a neotype is designated here with sequence data. Rossman *et al*. (2015) protected *Coryneum* over *Pseudovalsa*. Hence, we propose a new combination for *Pseudovalsa arausiaca* as *Coryneum arausiaca*. Both sexual and asexual morphs of *Coryneum arausiaca* were obtained from the same specimen as well as cultures which indicate a holomorph connection. We illustrate both sexual and asexual morphs of *Coryneum arausiaca* and the combined gene analysis of LSU nrDNA, ITS nrDNA, *rpb2* and *tef1* shows the distinct placement of *C. arausiaca* within *Coryneaceae* (Fig. 1, Clade 20).

Cryphonectriaceae Gryzenh. & M.J. Wingf., Mycologia 98: 246. 2006. Clade 6.

Saprobic or pathogenic in forest trees and economic crops. Sexual morph: *Ascostromata* scattered, immersed or erumpent, aggregated, oval to circular from above, comprising two layers, upper layer of yellowish orange to pale brown cells, purpling in KOH and inner layer of hyaline cells, mixed with plant cells. *Ascomata* immersed, aggregated, several in one stroma, globose to subglobose, fuscous black to umber, with long neck, or ostiolar canal sometimes immersed in stromatic tissues, or superficial, necks covered in umber stromatic tissue of *textura porrecta*, inner wall of the necks or ostiolar canal covered with hyaline, filamentous periphyses. *Peridium* comprising inner layer of small, hyaline cells of *textura angularis* and outer layer of small, brown cells of *textura angularis*. *Hamathecium* comprising a few cellular paraphyses and parenchymatous cells, attached at the base and asci dissolving at maturity. *Asci* 8-spored, unitunicate, cylindrical-fusoid to clavate, pedicellate, with distinct, J- refractive ring. *Ascospores* overlapping uniseriate to biseriate, ellipsoid, fusoid to cylindrical, aseptate to multi-septate, not constricted at the septa, hyaline, sometimes brown, smooth-walled. Asexual morph: Coelomycetous. *Conidiomata* occurring as a part of ascomata as conidial locules or solitary structures, uni- to multi-loculate, pyriform, subglobose to pulvinate, necks absent or present, if present, with one to several attenuated necks, superficial or semi-immersed, orange to fuscous-black. *Conidiophores* cylindrical, aseptate, hyaline, sometimes reduced to conidiogenous cells. *Conidiogenous cells* lining the inner cavity of the conidiomata, phialidic, sometimes within flattened bases, ampulliform, inconspicuous, with attenuated or truncate apices, hyaline, smooth. *Conidia* minute, sometimes both micro- and macro-conidia present, sigmoid, broadly ellipsoid to fusoid, obovoid-cylindrical to allantoid, aseptate, hyaline.

Type genus: *Cryphonectria* (Sacc.) Sacc. & D. Sacc.

Type species: *Cryphonectria parasitica* D. Sacc.

Notes: *Cryphonectriaceae* (Fig. 1, Clade 6) is mostly a pathogenic family comprising some of the world's most important tree pathogens (Vermeulen *et al*. 2011). Cryphonectriaceous species are saprobes, endophytes and phytopathogens. They cause cankers, blights and dieback of economically important plants and forest trees. Castlebury *et al*. (2002) recognised the *Cryphonectria-Endothia* complex (a precursor to the *Cryphonectriaceae*) as a separate clade in *Diaporthales* based on analysis of LSU nrDNA sequence data. *Cryphonectriaceae* was formally established by Gryzenhout *et al*. (2006c) to accommodate the *Cryphonectria-Endothia* complex and other allied genera when analysing LSU nrDNA sequence data of fungal taxa in *Diaporthales*. Species of this family can be distinguished from other families of *Diaporthales* by orange stromatic tissues, which turn purple in KOH and yellow in lactic acid. Initially *Amphilogia, Chrysoporthe*, *Cryphonectria*, *Endothia* and *Rostraureum* were placed in the family (Gryzenhout *et al*. 2006c). Subsequently, several additional genera were added to the family, some associated with serious canker or foliar diseases, namely: *Aurantiosacculus*, *Aurapex*, *Aurifilum*, *Celoporthe*, *Chromendothia*, *Chrysocrypta*, *Chrysofolia*, *Cryptometrion*, *Diversimorbus*, *Foliocryphia*, *Holocryphia*, *Immersiporthe*, *Lasmenia*, *Latruncellus*, *Luteocirrhus*, *Mastigosporella*, *Microthia*, *Prosopidicola* and *Ursicollum* (Vasilyeva *et al*. 1993, Gryzenhout *et al.* 2006a, b, Nakabonge *et al.* 2006, Begoude *et al.* 2010, Gryzenhout *et al.* 2010, Vermeulen *et al.* 2011, Crous *et al*. 2012a, Chen *et al*. 2013, Crane & Burgess 2013, Crous *et al.* 2013).

Endothia (1849) is typified by *E. gyrosa* and the asexual morph of this genus was reported as an *Endothiella* species (Barr 1978). However, *Endothiella* is congeneric with *Cryphonectria* and *Endothiella eucalypti* is the asexual morph of type species of *Cryphonectria*, *C. eucalypti* (Jackson 2003). *Endothiella* (1906) is based on the type species, *Endothiella gyrosa*, now placed in *Cryphonectria* as *C. decipiens* (Gryzenhout *et al*. 2009). Barr (1978) observed several specimens of *Cryphonectria* and *Endothia* and she used stromatic configuration and ascospore characters to differentiate these two genera. According to Barr (1978), *Cryphonectria* has a valsoid configuration of perithecia in prosenchymatous stromata and ellipsoid or ovoid, 1-septate ascospores, while *Endothia* has a diatrypoid configuration of perithecia in pseudoparenchymatous stromata and allantoid, unicellular ascospores. Based on these characters, most *Endothia* species have been moved to *Cryphonectria* and the generic name *Endothia* was restricted to the species with a diatrypoid configuration of the perithecia and allantoid, unicellular ascospores. Combined analysis of LSU nrDNA, ITS nrDNA, *rpb2* and *tef1* sequence data in the present study shows *Cryphonectriaceae* is not well-supported (Fig. 1, Clade 6). Phylogenetic analyses of this study also place *Cryphonectria* and *Endothia* as two separate genera, as well as *Chrysocrypta* (Fig. 1, Clade 9), *Lasmenia* (Fig. 1, Clade 13) and *Prosopidicola* (Fig. 1, Clade 17) outside of *Cryphonectriaceae*. Hence, currently this family comprises *Amphilogia*, *Aurantioporthe*, *Aurantiosacculus*, *Aurapex*, *Aurifilum*, *Celoporthe*, *Chromendothia*, *Chrysofolia*, *Chrysoporthe*, *Chrysoporthella*, *Cryphonectria*, *Cryptometrion*, *Diversimorbus*, *Endothia*, *Foliocryphia*, *Holocryphia*, *Immersiporthe*, *Latruncellus*, *Luteocirrhus*, *Mastigosporella*, *Microthia*, *Rostraureum* and *Ursicollum*.

Cryphonectria parasitica (Murrill) M.E. Barr, Mycol. Mem. 7: 143. 1978. Facesoffungi number FoF03463. Fig. 5.
Basionym: *Diaporthe parasitica* Murrill, Torreya 6: 189. (1906).

Pathogenic on branches of *Castanea dentata*. Sexual morph: *Ascostromata* 6.5–1 mm diam (x̄ = 0.8 mm, n = 20), comprising erumpent to superficial, orange epistromatic portion and immersed, hyaline, parenchymatous portion. *Ascomata* 650–715 µm high, 210–220 µm diam (x̄ = 685 × 216 µm, n = 20), perithecial, immersed, globose to subglobose, with black to brown ostiole, ostiolar canal slender, covered with orange to fuscous-black stromatic tissue. *Hamathecium* aparaphysate, comprising parenchymatous tissues. *Asci* 20–35 × 5–8 µm (x̄ = 28 × 6.4 µm, n = 20), 8-spored, unitunicate, fusiform to cylindrical base with small pedicel, apex oblong. *Ascospores* 5–6 × 2–2.5 µm (x̄ = 5.5 × 2.2 µm, n = 20), overlapping uni- or biseriate, hyaline, ellipsoid to fusiform, 1-septate. Asexual morph: *Conidiomata* 250–300 µm high, 180–200 µm diam (x̄ = 280 × 185 µm, n = 20), eustromatic, erumpent, pyriform to pulvinate, orange to fuscous black, occurring in the same stroma as perithecia. *Conidiophores* 3–4 × 1–1.5 µm (x̄ = 3.4 × 1.1 µm, n = 20), cylindrical, unbranched, hyaline. *Conidiogenous cells* 2.5–5 × 0.5–1 µm (x̄ = 3.3 × 0.8 µm, n = 20), phialidic, simple or branched. *Conidia* 1.8–2.5 × 0.5–1 µm (x̄ = 2.1 × 0.9 µm, n = 20), hyaline, minute, allantoid to cylindrical, aseptate.

Materials examined: **USA**, New York. Bronx Co. Bronx. North of Botanical Museum, Bronx Park, on *Castanea dentata* (*Fagaceae*), 26 Nov. 1905, W.A. Murrill (**holotype** 01293321, as *Diaporthe parasitica*, NY).

Notes: American chestnut blight, caused by *Cryphonectria parasitica*, destroyed American chestnut trees in the USA and Canada at the end of the 19th century. Scientists believed *Cryphonectria parasitica* arrived from north-east Asia in the late 19th century and they discovered that Japanese and Chinese chestnut varieties showed resistance to *C. parasitica*. Spores of this fungus are highly resistant to unfavourable environmental conditions and they can be produced at any time of year when conditions are suitable. The fungus can exist as a saprobe and a parasite. Mycelium can survive more than 10 mo in dried bark and soil (Hepting 1974). Conidia and ascospores of *C. parasitica* are sometimes forcibly ejected and spread in wind and rain. Spores of *Cryphonectria parasitica* are also dispersed by beetles and birds. In addition to chestnut species, some oak species and Chinquapin also are infected by *Cryphonectria parasitica*.

Cytosporaceae Fr. [as '*Cytisporei'*], Syst. orb. veg. (Lundae) 1: 118. 1825. Clade 16.
Synonym: *Valsaceae* Tul. & C. Tul. [as '*Valsarum*'], Select. fung. carpol. (Paris) 1: 180. 1861.

Pathogenic or saprobic on plant tissues. Sexual morph: *Stromata* well or poorly developed. *Ectostroma* circular or irregular, usually well developed in the upper regions. *Entostroma* normally limited to the region near the perithecial walls. *Ascomata* perithecia, immersed to erumpent, solitary or 6–10 ascomata aggregated in valsoid configuration, globose to oblong, coriaceous, black to brown, with long neck swollen at the tips, ostiolate. *Ostiole* periphysate, open through the neck. *Peridium* thin, comprising outer, 4–6 layers of, dark brown, thick-walled, cells of *textura angularis* and 5–7 layers of, inner, small, hyaline, thin-walled, cells of *textura angularis*. *Hamathecium* comprising few, hyaline paraphyses limited only at young stage. *Asci* unitunicate, 8-spored, clavate, short-pedicellate, apex round, with apical ring. *Ascospores* uni- to biseriate, unicellular or rarely bicellular, allantoid or ellipsoid, hyaline, smooth-walled. Asexual morph: *Stromata* uniloculate, black, circular in shape. *Locule* composed of numerous inter connecting chambers arranged radially or irregularly within a continuous mass of ectostromatic tissue, one conidioma per locule. *Conidiomata* pyriform in section, brown, divided into compartments by bending of peridium. *Peridium* consists of brown, 5–7 layers of *textura angularis* cells. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* arising from conidiomatal wall, phialidic, simple or branched, hyaline, cylindrical. *Conidia* unicellular, allantoid, hyaline, smooth-walled.

Type genus: *Cytospora* Ehrenb.

Type species: *Cytospora chrysosperma* (Pers.) Fr.

Notes: The *Cytosporaceae* (Fig. 1, Clade 16) comprises phytopathogenic species and saprobes. Most *Cytospora* species are plant pathogens and cause cankers and dieback of many hardwoods and coniferous trees, as well as rarely on herbaceous plants. Generally, *Cytospora* cankers are known as valsa-canker, Leucostoma-canker or perennial canker (Farr *et al*. 1989). *Cytospora* species have been reported as highly virulent and destructive pathogens on *Prunus* and *Populus* trees (Biggs 1989, Kepley & Jacobi 2000). A few *Cytospora* species are considered as facultative wound parasites that attack damaged or weakened plants.

Maharachchikumbura *et al*. (2015, 2016) listed 13 genera under this family as *Amphicytostroma*, *Chadefaudiomyces*, *Cryptascoma*, *Cytospora*, *Ditopellina*, *Durispora*, *Harpostroma*, *Hypospilina*, *Kapooria*, *Leptosillia*, *Maculatipalma*, *Pachytrype*, and *Paravalsa*. However, the type species of *Amphicytostroma*, *A.*

tiliae is the asexual morph of the type species of *Amphiporthe*, *A. hranicensis*, and these generic names are synonyms (Sutton 1980). *Amphiporthe* is more widely used than *Amphicytospora* and it seems best to protect the former (Rossman *et al*. 2015). However, *Amphiporthe* belongs in *Gnomoniaceae* (Sogonov *et al*. 2008; Fig. 1, Clade 1) and we exclude this genus from *Cytosporaceae*. Rossman *et al*. (2015) proposed to use *Cytospora* (1818) rather than *Valsa* (1825), *Valsella* (1870), *Leucostoma* (1917), *Valseutypella* (1919), or *Leucocytospora* (1927). *Xenotypa* is a genus in *Gnomoniaceae* and typified by *Xenotypa aterrima*. This genus is characterised by having solitary or aggregated, erumpent, globose, papillate ascomata with allantoid to cylindrical, unicellular, hyaline ascospores. Morphologically this is similar to *Paravalsa* and *Valsella*. Ananthapadmanaban (1990) described the relationship between *Xenotypa* and *Paravalsa*, accommodating *Paravalsa* in *Valsaceae*. However, many of the fungal taxa listed in Maharachchikumbura *et al*. (2015) do not share similar morphological characters and it is necessary to restrict this family to *Cytospora sensu-lato*. *Cytospora*, *Valsella*, *Leucostoma*, *Valsa* and *Pachytrype* have sequence data in accessible data bases. Hence, we suggest to accommodate *Cytospora*, *Paravalsa*, *Pachytrype*, *Waydora* and *Xenotypa* in *Cytosporaceae*. However, the *Cytospora sensu-lato* complex still needs to be resolved using high resolution genes as it seems to comprise several genera.

Cytospora centrivillosa Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821567. Facesoffungi number FoF03464. Fig. 6.

Etymology: Name based on two Latin words "*centrum*" and "*villos*" meaning hamathecium comprising filiform paraphyses.

Saprobic on dead branch of *Sorbus domestica*. Sexual morph: *Stromata* poorly developed, comprising loosely packed parenchymatous cells, black. *Ascomata* 550–725 µm high, 160–215 µm diam (x̄ = 611 × 190 µm, n = 20), aggregated, immersed, globose to subglobose, dark brown, coriaceous, ostiolate, papillate. *Papilla* 285–430 µm high, 90–130 µm diam (x̄ = 340 × 101 µm, n = 20), long, central or asymmetrically located, wall thick, internally covered by hyaline periphyses. *Peridium* comprises brown, thick-walled cells of *textura angularis*. *Asci* 75–85 × 15–19 µm (x̄ = 79 × 18 µm, n = 20), 8-spored, unitunicate, clavate to fusiform, without apical ring and pedicel. *Ascospores* 16–20 × 4–6 µm (x̄ = 17 × 5 µm, n = 20), biseriate, allantoid, hyaline, smooth. Asexual morph: Coelomycetous. *Conidiomata* on MEA appears as pale yellow, slimy heads of conidial mass, immersed, black. *Conidiophores* 6.5–8 × 3–3.5 µm (x̄ = 7.4 × 3.1 µm, n = 20), cylindrical, unbranched, hyaline. *Conidiogenous cells* 10–13.5 × 1–2 µm (x̄ = 11.7 × 1.6 µm, n = 20), cylindrical, tapering towards the apices, bearing single conidia at each tip, hyaline. *Conidia* 4–6 × 1–1.5 µm (x̄ = 5.1 × 1.1 µm, n = 20), eguttulate, allantoid, aseptate, hyaline.

Culture characteristics: Colonies growing on MEA attenuated 1 cm incubated at 18 °C within 4 d, fast growing, circular, flat, entire, white, thin, tightly attached to the media, mycelia clots arrange radially from center to margin.

Specimens examined: **Italy**, Province of Forlì-Cesena, Predappio, Monte Mirabello, on dead and aerial branch of *Sorbus domestica* (*Rosaceae*), 1 Oct. 2014, E. Camporesi, IT 2132 (**holotype** MFLU 17–0887, **isotype** BBH 42449, culture ex-type MFLUCC 16–1206); Province of Forlì-Cesena, Predappio, Monte Mirabello, on dead and aerial branch of *Sorbus domestica* (*Rosaceae*), 13 Oct. 2014, E. Camporesi, IT 2132B, MFLU 17–0999, culture MFLUCC 17–1660.

Note: *Cytospora centrivillosa* is morphologically and phylogenetically distinct from other species in *Cytospora* and our analysis results in a distinct clade with full support (Fig. 1, Clade 16).

Cytospora fraxinigena Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821568. Facesoffungi number FoF03465. Fig. 7.

Etymology: Named after the host genus *Fraxinus*.

Saprobic on dead branch of *Fraxinus ornus*. Sexual morph: *Stromata* poorly developed, comprising loosely packed parenchymatous cells, black. *Ascomata* 350–500 × 150–230 µm (x̄ = 429 × 189 µm, n = 20), immersed in stromatic tissues, globose to subglobose, dark brown, coriaceous, ostiolate, papillate. *Papilla* 185–200 × 60–95 µm (x̄ = 193 × 79 µm, n = 20), long, central, wide, thick-walled, internally covered by hyaline periphyses. *Peridium* comprises brown, thick-walled cells of *textura angularis*. *Asci* 26–33 × 6.2–7.5 µm (x̄ = 30 × 6.7 µm, n = 20), 8-spored, unitunicate, clavate to fusiform, without apical ring and pedicel. *Ascospores* 5.5–7.5 × 1.5–2 µm (x̄ = 6.4 × 1.7 µm, n = 20), biseriate, allantoid, hyaline, smooth. Asexual morph: Not observed.

Culture characteristics: Colonies growing on MEA attenuated 1 cm incubated at 18 °C within 7 d, moderate fast growing, irregular, flat, undulate, white, woolly, loosely attached to the media.

Specimen examined: **Italy**, Province of Forlì-Cesena, Santa Sofia, near Corniolo, dead branch of *Fraxinus ornus* (*Oleaceae*), 6 Dec. 2013, E. Camporesi, IT 1562 (**holotype** MFLU 17–0880, **isotype** BBH 42442, culture ex-type MFLUCC 14–0868).

Notes: *Cytospora fraxinigena* forms a distinct clade which is sister to *Cytospora cedri* and *Cytospora rosae* (Fig. 1, Clade 16). Morphologically, *Cytospora fraxinigena* differs from those species in having slightly horizontal necks closely arranged at apex and hamathecium without paraphyses.

Cytospora junipericola Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821569. Facesoffungi number FoF03466. Fig. 8.

Etymology: Named after the host genus *Juniperus.*

Saprobic on dead branch of *Juniperus* sp. Sexual morph: *Stromata* poorly developed, comprising loosely packed parenchymatous cells, black. *Ascomata* 630–700 µm high, 150–250 µm diam (x̄ = 670 × 170 µm, n = 20), immersed in stromatic tissues, globose to subglobose, dark brown, coriaceous, ostiolate, papillate. *Papilla* 300–500 µm high, 45–65 µm diam (x̄ = 440 × 58 µm, n = 20), long, central, wide, thick-walled, internally covered by hyaline periphyses. *Peridium* comprises brown, thick-walled cells of *textura angularis*. *Asci* 30–35 × 5.5–7 µm (x̄ = 32 × 6 µm, n = 20), 8-spored, unitunicate, clavate to fusiform, without apical ring and pedicel. *Ascospores* 5–10 × 1–2 µm (x̄ = 7 × 1.5 µm, n = 20), biseriate, allantoid, hyaline, smooth. Asexual morph: Not observed.

Culture characteristics: Colonies growing on MEA attenuated 1 cm incubated at 18 °C within 7 d, moderate fast growing, irregular, flat, undulate, greenish ash, woolly, curled, loosely attached to the media.

Specimen examined: **Italy**, Province of Forlì-Cesena, Santa Sofia, near Cabelli, dead branch of *Juniperus communis* (*Cupressaceae*), 13 Jan. 2014, E. Camporesi, IT 1643 (**holotype** MFLU 17–0882, **isotype** BBH42444).

Notes: *Cytospora junipericola* forms a distinct clade that is sister to *Cytospora quercicola* with high bootstrap support (Fig. 1, Clade 16). Morphologically *Cytospora junipericola* produces tightly packed aggregated ascomata in poorly developed stromatic tissues. Papilla are asymmetrically located and only the ostiolar openings are close together.

Cytospora quercicola Senan., Camporesi, & K.D. Hyde, **sp. nov.** MycoBank MB821570. Facesoffungi number FoF03467. Fig. 9.

Etymology: Named after the host genus *Quercus.*

Saprobic on dead branch of *Quercus* sp. *Stromata* poorly developed, spread around the papilla, black. *Ascomata* 550–725 µm high, 160–215 µm diam (x̄ = 611 × 190 µm, n = 20), scattered, aggregated, immersed, globose to subglobose, dark brown, coriaceous, ostiolate, papillate. *Papilla* 285–430 µm high, 90–130 µm diam (x̄ = 340 × 101 µm, n = 20), long, central or asymmetrically located, papilla close to each other when open to host surface. *Peridium* comprises brown, thick-walled cells of *textura angularis*. *Asci* 75–85 × 15–19 µm (x̄ = 79 × 18 µm, n = 20), 8-spored, unitunicate, clavate to fusiform, without apical ring and pedicel. *Ascospores* 16–20 × 4–6 µm (x̄ = 17 × 5 µm, n = 20), biseriate, allantoid, hyaline, smooth.

Culture characteristics: Colonies growing on MEA becoming 1 cm within 7 d incubated at 18 °C, circular, flat, smooth colony with white mycelium, mycelia loosely attached to the substrate.

Specimen(s) examined: **Italy**, Province of Forlì-Cesena, Santa Sofia, near Camposonaldo, on dead branch of *Quercus* sp. (*Fagaceae*), 10 Dec. 2013, E. Camporesi, IT 1568 (**holotype** MFLU 17-0881, **isotype** BBH 42443, culture ex-type MFLUCC 14-0867).

Notes: The *Cytospora quercicola* clade is fully-supported by the multi-gene phylogenetic analyses (Fig. 1, Clade 16). This species is sister to *Cytospora junipericola.*

Cytospora rosae Senan., Camporesi, & K.D. Hyde, **sp. nov.** MycoBank MB821571. Facesoffungi number FoF03468. Fig. 10.

Etymology: Named after the host genus *Rosa*.

Saprobic on *Rosa canina*. Sexual morph: *Stromata* restricted to around the ostiolar neck, black. *Ascomata* 235–255 µm high, 130–150 µm diam (x̄ = 240 × 140 µm, n = 20), solitary to rarely aggregated, scattered, immersed, globose, brown, coriaceous, ostiolate, papillate. *Papilla* 127–140 µm high, 70–90 µm diam (x̄ = 135 × 87 µm, n = 20), straight or curved, long, brown, internally covered by hyaline periphyses, wall comprising elongated, thick-walled cells. *Peridium* 16–23 µm diam (x̄ = 20 µm, n = 20), comprising outer, thick-walled, brown cells of *textura angularis* and inner, compressed, thick-walled, hyaline cells of *textura angularis*. *Hamathecium* comprising septate, hyphae-like, hyaline, 1.5–2.7 µm diam (x̄ = 2.5 µm, n = 20) paraphyses. *Asci* 20–23 × 3.2–3.7 µm (x̄ = 21 × 3.7 µm, n = 20), unitunicate, 8-spored, clavate, short-pedicellate, apex round, with apical ring. *Ascospores* 4.2–6.3 × 1–1.5 µm (x̄ = 5.5 × 1.3 µm, n = 20), uni- to biseriate, unicellular, allantoid, or ellipsoid, hyaline, smooth-walled. Asexual morph: *Conidiomata* 100–200 µm diam (x̄ = 150 µm, n = 20), solitary to aggregate, immersed, pyriform to subglobose, multi-loculate, black, coriaceous, ostiolate, papillate, peridium folded into centrum. *Pycnidial walls* 4–7 µm diam (x̄ = 6 µm, n = 20), comprising small, thick-walled, brown cells of *textura angularis*. *Conidiophores* 8–12 × 1.5–2.5 µm (x̄ = 11 × 2 µm, n = 20), cylindrical, shorter than conidiogenous cells, branched, hyaline. *Conidiogenous cells* 10–15 × 1–1.5 µm (x̄ = 12 × 1.2 µm, n = 20), phialidic, cylindrical, tapering towards the apices, bearing single conidia at each tip. *Conidia* 3–5 × 0.5–1 µm (x̄ = 2 × 1 µm, n = 20), aguttulate, elongated to allantoid, slightly curved, aseptate, hyaline.

Culture characteristics: Colonies growing on MEA attained 2 cm within 7 d incubated at 18 °C, filamentous, flat, filiform, middle blackish ash, margin off white, cottony, tiny mycelium clots arrange radially from center to margin.

Specimen(s) examined: **Italy**, Province of Forlì-Cesena, Galeata, near Passo delle Forche, on dead branch of *Rosa canina* (*Rosaceae*), 15 Apr. 2014, E. Camporesi, IT 1814 (**holotype** MFLU 17-0885, **isotype** BBH 42447, cultures ex-type MFLUCC 14–0845; Province of Forlì-Cesena, Galeata, near Passo delle Forche, on dead branch of *Rosa canina* (*Rosaceae*), 4 Jan. 2016, E. Camporesi, IT 1814 (**paratype** MFLU 15–3596, cultures ex-paratype MFLUCC 17–1664).

Notes: Combined ITS nrDNA, LSU nrDNA, *rpb2* and *tef1* sequence data in the current study shows that *Cytospora rosae* forms a distinct clade with high bootstrap support, basal to *Cytospora fraxinigena* (Fig. 1, Clade 16). Morphologically, *Cytospora rosae* has unique characters of solitary ascomata and small asci with septate, wide, hyaline, hyphae-like paraphyses.

Cytospora salicina Norphanphoun *et al*., Mycosphere 8: 80. 2017. Fig. 11.

Saprobic on twigs and branches of *Cornus sanguinea*. Sexual morph: Undetermined. Asexual morph: *Stromata* appear as black pinhead spots surrounding by yellow to pale brown tissues on the substrate, immersed, rosette, labyrinthine, pale brown to black, 1–5 pycnidia in a stroma, comprising loosely packed, pale brown cells of *textura globosa*, ostiole. Papilla narrow, short, internally covered by periphyses, converged, black, furfuraceous. *Pycnidial locules* multi-chambered, subdivided by invaginations of common pycnidial walls. *Conidiomata* 530–600 µm high, 600–870 µm diam (x̄ = 570 × 705 µm, n = 20), solitary to aggregate, immersed, pyriform to subglobose, black, coriaceous, ostiolate, papillate, peridium folded into centrum. *Papilla* 200–300 µm high, 60–95 µm diam (x̄ = 210 × 80 µm, n = 20), internally covered by hyaline filiform periphyses. *Pycnidial walls* 7–11 µm diam (x̄ = 9.2 µm, n = 20), comprising small, thick-walled, brown cells of *textura angularis*, separates from stromata at maturity. *Conidiophores* 9–15 × 1.5–2.5 µm (x̄ = 11.4 × 2 µm, n = 20), cylindrical, shorter than conidiogenous cells, branched, hyaline. *Conidiogenous cells* 10–20 µm high, 1–1.5 µm diam (x̄ = 16 × 1.3 µm, n = 20), phialidic, cylindrical, tapering towards the apices, bearing single conidia at each tip. *Conidia* 4.5–6 × 0.5–1.5 µm (x̄ = 5 × 1.3 µm, n = 20), eguttulate, elongated to allantoid, slightly curved, aseptate, hyaline.

Culture characteristics: Colonies growing on PDA attenuated 2 cm incubated at 18 °C within 10 d, circular, flat, entire, white, thin, slightly aerial mycelia, loosely attached to the media.

Specimen examined: **Russia**, Rostov Region, Krasnosulinsky District, Donskoye forestry, Kabanya Balka (Boar gully), twigs and branches of *Cornus sanguinea* subsp. *australis* (*Cornaceae*), 27 Oct. 2015, T.S. Bulgakov, R1111, MFLU 17–0891, living culture MFLUCC 16–1190).

Notes: *Cytospora salicina* was introduced by Norphanphoun *et al.* (2017) from Russia causing canker on *Salix* sp. However, we collected this specimen from Russia associated with twigs and branches of *Cornus sanguinea*. *Cytospora salicina* is closely related to *C. chrysosperma*, *C. melnikii*, and *C. sordida* (Fig. 1, Clade 16).

Diaporthaceae Höhn. ex Wehm., Am. J. Bot. 13: 638. 1926. Clade 14.

Pathogenic, endophytic or saprobic on terrestrial and rarely submerged plants. Sexual morph: *Pseudostromata* well- or poorly developed, pulvinate, erumpent, flat or slightly convex, orbicular, circular or somewhat irregular, sclerotioid, coriaceous, whitish to brownish black, with or without black zone or a crust consisting of fungus tissue, solitary or containing up to 10 ascomata in a stroma. *Ectostromatic disk* subhyaline to brown.

Ascomata perithecial, immersed to erumpent, solitary or aggregated in a valsoid configuration, globose or compressed, coriaceous, black, ostiolate, papillate. *Papilla* short or long, erumpent, convergent, cylindrical to conical, black, internal wall covered by hyaline periphyses, composed of vertically arranged parenchymatous tissues. *Peridium* comprising outer layer of flattened, thick-walled, dark-brown cells of *textura angularis* and inner, hyaline, thin-walled cells of *textura angularis. Hamathecium* comprising septate, unbranched, cylindrical paraphyses. *Asci* 8-spored, unitunicate, clavate, oblong-clavate to broadly fusoid, sessile, with a distinct apical ring. *Ascospores* biseriate to partially biseriate, ellipsoid, oblong to fusoid, unicellular or 1-septate, constricted at septum, with or without appendages at both ends, hyaline, dark brown, sometimes narrowly rounded ends and multi-guttulate, smooth-walled. Asexual morph: *Conidiomata* acervular or pycnidial, globose, initially immersed, erumpent at maturity, solitary, scattered, coriaceous, black, elongated ostiolar neck, sometime becoming multi-loculate with one to several clearly defined black necks extending above the stroma, often with yellowish, conidial mass extruding from ostiole. *Peridium* comprising 3–4 layers of pale brown cells of *textura intricata* to *textura angularis*. *Conidiophores* sometimes dimorphic. *Alpha conidiophores* tightly aggregated, subcylindrical, branched in mid region, consisting of 2–3 supporting cells, giving rise to septate, ampulliform, cylindrical to irregular conidiogenous cells or paraphyses, straight to sinuous, 1–5-septate, cylindrical, hyaline to pale brown, branched only at the base, smooth, formed from the inner most cell layers of the conidiomatal wall, sometimes terminal and lateral, apex with minute periclinal thickening and collarette. *Beta conidiophores* interspersed among alpha conidiophores, hyaline, subcylindrical, branched, 1–3-septate. *Alpha conidiogenous cells* enteroblastic, phialidic, cylindrical or subcylindrical, terminal and lateral, slightly tapering towards the apex or sometimes apex with minute periclinal thickening and collarette. *Beta conidiogenous cells* phialidic, integrated, terminal and lateral. *Alpha conidia* abundant, fusiform, ovate, subcylindrical to narrowly ellipsoid, straight or curved, occasionally irregular, smooth-walled, 0–2-septate, hyaline, base truncate to sub-truncate, apex obtuse, straight to curved, occasionally slightly sigmoid, pale to medium brown, with many guttules, sometimes short, hyaline, appendages at both ends. *Beta conidia* subcylindrical, fusiform to hooked, straight to slightly curved, aseptate, hyaline, smooth, base sub-truncate, sometimes widest in middle or in upper third, tapering to acutely rounded apex, truncate at base.

Type genus: *Diaporthe* Nitschke.

Type species: *Diaporthe eres* Nitschke.

Notes: The family *Diaporthaceae* (Fig. 1, Clade 14) comprises many endophytic and phytopathogenic fungal species (Udayanga *et al*. 2011) and it was introduced and accommodated in *Diaporthales* by von Höhnel (1917). Wehmeyer (1975) confined this family to *Diaporthe* and *Mazzantia.* However, Barr (1978) synonymised *Diaporthaceae* under *Valsaceae.* Castlebury *et al*. (2002) analysed LSU nrDNA sequence data of diaporthoid taxa and showed the distinct placement of *Diaporthaceae* in *Diaporthales*, forming a well-supported clade. *Diaporthaceae* previously comprised only *Diaporthe* (*Phomopsis*) and *Mazzantia* based on phylogenetic analysis (Castlebury *et al*. 2002). However, Lumbsch & Huhndorf (2010) included *Apioporthella* and *Leucodiaporthe* in this family. A LSU nrDNA sequences analysis by Lamprecht *et al*. (2011) indicates placement of *Stenocarpella* and *Phaeocytostroma* within *Diaporthaceae*. *Pustulomyces* was introduced based on a combined gene analysis of LSU nrDNA, SSU nrDNA and *tef1* sequence data (Dai *et al*. 2014). Voglmayr & Jaklitsch (2014) confirmed the phylogenetic placement of *Phaeodiaporthe* in *Diaporthaceae* based on analysis of LSU nrDNA sequence data. Maharachchikumbura *et al*. (2015) listed *Allantoporthe*, *Apioporthella*, *Clypeoporthella*, *Diaporthe*, *Diaporthella*, *Diaporthopsis*, *Leucodiaporthe*, *Mazzantia*, *Mazzantiella*, *Ophiodiaporthe* and *Pustulomyces* as genera of *Diaporthaceae.* Rossman *et al*. (2015) synonymised *Mazzantiella* under *Mazzantia* based on greater usage of *Mazzantia*. The genus *Clypeoporthella* is based on *C. brencklei*, and a recently collected *C. brencklei* (BPI 843482) specimen was grown in culture and sequenced. DNA sequence data showed that *C. brencklei* clustered together with *Diaporthe* and it has a *Phomopsis* asexual morph. Thus, *Clypeoporthella* is considered as a synonym of *Diaporthe* (Sogonov *et al*. 2008). The genus *Diaporthopsis* was introduced to accommodate species that are similar to *Diaporthe*, with unicellular ascospores and was typified by *D. angelicae.* Molecular analysis of LSU nrDNA sequence data showed that *D. angelicae* clustered within the *Diaporthe*. In addition, *Diaporthopsis angelicae* has similar morphological characters of stromata, perithecia, and centrum to species of *Diaporthe*. Based on morphology and molecular data, *Diaporthopsis* was synonymised under *Diaporthe* (Castlebury *et al*. 2003, Gomes *et al*. 2013). The genus *Diaporthella* has aggregated perithecia within well-developed stromata and median, 1-septate ascospores. *Diaporthella corylina* is strongly parasitic and causes dieback of *Corylus* stems. Morphologically *Diaporthella corylina* shows similar characters to *Anisogramma anomala*. *Anisogramma* based on *A. virgultorum* is known to belong in the *Gnomoniaceae* (Castlebury *et al*. 2002, Vasilyeva *et al*. 2007). However, the LSU nrDNA, ITS nrDNA, *rpb2* and *tef1* combined gene analyses in the current study show (Fig. 1, Clade 5) the phylogenetic placement of *Diaporthella* is outside of *Diaporthaceae* and it does not show affinities with any families in

Diaporthales. Hence *Diaporthaceae* comprises *Allantoporthe*, *Apioporthella*, *Chaetoconis*, *Diaporthe*, *Leucodiaporthe*, *Mazzantia*, *Ophiodiaporthe*, *Phaeocytostroma*, *Phaeodiaporthe*, *Pustulomyces* and *Stenocarpella*. Based on an LSU nrDNA phylogeny, Gao *et al*. (2017) showed *Diaporthe sensu lato* to be polyphyletic, including genera such as *Mazzantia*, *Ophiodiaporthe*, *Pustulomyces*, *Phaeocytostroma*, and *Stenocarpella*. In the present study, we address this situation by proposing *Chiangraiomyces*, *Paradiaporthe*, *Hyaliappendispora* as new genera in *Diaporthaceae*. We collected and illustrate here several taxa in *Diaporthaceae* that are new to science or are poorly studied.

Chiangraiomyces Senan. & K.D. Hyde, **gen. nov.** MycoBank MB821544. Facesoffungi number FoF03469.

Etymology: Name related to the collection locality of Chiang Rai, Thailand.

Saprobic on dead wood. Sexual morph: *Ascomata* solitary, scattered, immersed to erumpent, globose to subglobose, coriaceous, black, papillate, ostiolate. *Papilla* long, internally covered by hyaline, periphyses. *Peridium* comprising outer, thick-walled, brown cells of *textura angularis* and inner, hyaline, thick-walled, compressed cells of *textura angularis*. *Hamathecium* comprising hyaline, aseptate, filamentous paraphyses. *Asci* unitunicate, 8-spored, fusiform, sessile to short pedicellate, with J-, funnel-shaped, apical ring. *Ascospores* biseriate to overlapping uniseriate, fusiform to ellipsoid, hyaline, smooth-walled, 1-septate, with two large guttules in the center and two small guttules at the ends. Asexual morph: *Conidiomata* produced on PDA when incubated at 18 °C after 2 wk, pycnidial, globose, erumpent at maturity, black, coriaceous, short neck. *Conidiomatal wall* comprising pale brown, thick-walled cells of *textura angularis*. *Conidiophores* ampulliform, straight, branched, septate, hyaline, smooth. *Conidiogenous cells* phialidic, terminal, cylindrical, slightly tapering towards the apex. *Hamathecium* aparaphysate. *Alpha conidia* aseptate, hyaline, smooth, ovate to ellipsoidal, less in amount. *Beta conidia* fusiform to hooked, base subtruncate, aseptate, hyaline, smooth.

Type species: Chiangraiomyces bauhiniae Senan. & K.D. Hyde.

Chiangraiomyces bauhiniae Senan. & K.D. Hyde, **sp. nov.** MycoBank MB821545. Facesoffungi number FoF03470. Fig. 12.

Etymology: Name based on the host *Bauhinia*, from which it was collected.

Saprobic on *Bauhinia* sp. Sexual morph: *Ascomata* 200–300 μm high, 150–180 μm diam (x̄ = 230 × 240 μm, n = 20), solitary, scattered, immersed to erumpent, globose to subglobose, coriaceous, black, papillate, ostiolate. *Papilla* 115–140 μm high, 75–90 μm diam (x̄ = 130 × 85 μm, n = 20), long, internally covered by hyaline, periphyses. *Peridium* 11–14 μm wide (x̄ = 12.5 μm, n = 20), comprising outer, thick-walled, brown cells of *textura angularis* and inner, hyaline, thick-walled, compressed cells of *textura angularis*. *Hamathecium* 2.5–3 μm wide (x̄ = 2.8 μm, n = 20), comprising hyaline, aseptate, filamentous paraphyses. *Asci* 75–90 × 12–13 μm (x̄ = 78 × 12.5 μm, n = 20), unitunicate, 8-spored, fusiform, with J-, funnel-shaped, apical ring, sessile to short pedicellate. *Ascospores* 17–18 × 3–4 μm (x̄ = 17.8 × 3.6 μm, n = 20), biseriate to overlapping uniseriate, fusiform to ellipsoid, hyaline, smooth-walled, 1-septate, with two large guttules in the center and two small guttules at the ends. Asexual morph: *Conidiomata* 300–500 μm diam (x̄ = 450 μm, n = 20), produced on PDA when incubated at 18 °C after 2 wk, pycnidial, globose, erumpent at maturity, black, coriaceous, short neck. *Conidiomatal wall* comprising pale brown, thick-walled cells of *textura angularis*. *Conidiophores* 4–6 × 2–4 μm (x̄ = 5 × 3 μm, n = 20), ampulliform, straight, branched, septate, hyaline, smooth. *Conidiogenous cells* 7–10 × 2–3 μm (x̄ = 8 × 2.3 μm, n = 20), phialidic, terminal, cylindrical, slightly tapering towards the apex. *Hamathecium* aparaphysate. *Alpha conidia* 3–5 × 2–4 μm (x̄ = 4.7 × 3.3 μm, n = 20), aseptate, hyaline, smooth, ovate to ellipsoidal, less in amount. *Beta conidia* 18–38 × 1.5–2 μm (x̄ = 24 × 1.7 μm, n = 20), fusiform to hooked, base sub-truncate, aseptate, hyaline, smooth.

Culture characteristics: Colonies growing on MEA attained 1 cm within 7 d when incubated 25 °C, fast growing, circular, irregular, flat, white, forming aerial mycelia with hyphae loosely attached to the medium.

Specimen examined: **Thailand**, Chiang Rai, Mae Fah Luang University, near University President's house, on dead twigs of *Bauhinia* sp. (*Fabaceae*), I.C. Senanayake, 25 Dec. 2014, CHUNI 81 (**holotype** MFLU 17-0964, cultures ex-type MFLUCC 17–1669, MFLUCC 17–1670).

Notes: *Chiangraiomyces bauhiniae* has immersed, solitary ascomata, fusiform asci, with a J-, funnel-shaped, apical ring, and oval to fusiform ascospores with 2 large central guttules and 2 small marginal guttules. Phylogenetically, *Chiangraiomyces bauhiniae* forms a fully-supported clade that is sister to *Ophiodiaporthe cyatheae* (Fig. 1, Clade 14). Hence, we introduce *Chiangraiomyces* to accommodate this taxon.

Paradiaporthe Senan., Camporesi & K.D. Hyde, **gen. nov.** MycoBank MB821546. Facesoffungi number FoF03471.

Etymology: The name reflects the morphological similarity to *Diaporthe.*

Saprobic on dead twigs of *Artemisia* sp. Sexual morph: *Ascomata* solitary, scattered, immersed, becoming erumpent when mature, globose to subglobose, black, coriaceous, ostiolate, papillate. *Papilla* periphysate with short, wide, prominent ostiole. *Peridium* thin at the base, gradually thickening towards the neck, comprising inner, hyaline, compressed, thin-walled cells of *textura angularis* and outer, thick-walled, brown cells of *textura angularis*. *Hamathecium* aparaphysate. *Asci* 8-spored, unitunicate, fusiform to clavate, sessile, apex rounded with a J-, apical ring. *Ascospores* biseriate, fusiform with pointed ends, medianly 1-septate, hyaline, smooth-walled. Asexual morph: Undetermined.

Type species: *Paradiaporthe artemisiae* Senan., Camporesi & K.D. Hyde

Paradiaporthe artemisiae Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821547. Facesoffungi number FoF03472. Fig. 13.

Etymology: The name reflects the host genus *Artemisia*.

Saprobic on dead twigs of *Artemisia* sp. Sexual morph: *Ascomata* 280–300 μm high, 180–200 μm wide (x̄= 290 × 190 μm, n = 10), solitary, scattered, immersed, becoming erumpent when mature, globose to subglobose, black, coriaceous, ostiolate, papillate. *Papilla* 135–138 μm high, 110–140 μm wide, (x̄= 136 × 115 μm, n = 10), comprising filiform, hyaline periphyses with short, wide, prominent ostiole. *Peridium* 8–13 μm (x̄= 10 μm, n = 10), thin at the base, gradually thickened towards the neck, comprising inner, hyaline, compressed, thin-walled cells of *textura angularis* and outer, thick-walled, brown cells of *textura angularis*. *Hamathecium* aparaphysate. *Asci* 45–60 × 11–14 μm (x̄= 51 × 13.5 μm, n = 20) 8-spored, unitunicate, fusiform to clavate, sessile, apex rounded, with a J-, bi-lobed, apical ring. *Ascospores* 14–18.5 × 4–5 μm (x̄= 16 × 4.2 μm, n = 20) biseriate to overlapping uniseriate, fusiform with two small globules at the ends and two large globules at the middle of spore, medianly 1-septate, hyaline, smooth-walled. Asexual morph: Undetermined.

Culture characteristics: Colonies growing on MEA attained 1 cm within 7 d when incubated at 18 °C, irregular, circular, flat, woolly, white, mycelia loosely attached to the substrate.

Specimen examined: **Italy**, Province of Forlì-Cesena, Bagno di Romagna, Valbonella, on dead stem of *Artemisia* sp. (*Asteraceae*), E. Camporesi, 9 Jul. 2014, IT 1982 (**holotype** MFLU 17–0886, **isotypes** BBH 42448, cultures ex-type MFLUCC 14–0850, MFLUCC 17–1663).

Notes: *Paradiaporthe artemisiae* has erumpent, solitary ascomata with prominent, wide papilla. Morphologically, *Paradiaporthe* is similar to *Diaporthe.* However, *Paradiaporthe artemisiae* forms a distinct clade which is sister to *Phaeocytostroma artemisiae* (Fig. 1, Clade 14). Hence, we introduce *Paradiaporthe* as a new genus based on morphology and phylogeny.

Hyaliappendispora Senan., Camporesi & K.D. Hyde, **gen. nov.** MycoBank MB821548. Facesoffungi number FoF03473.

Etymology: Name reflects hyaline ascospores with long appendages.

Saprobic on dead stems. Sexual morph: *Ascomata* solitary to aggregate, immersed, globose to subglobose, black to brown, coriaceous, ostiolate, papillate. *Papilla* short, wide, internally covered by hyaline periphyses. *Peridium* comprising outer, dark brown, thick-walled cells of *textura angularis* and inner, thin-walled, hyaline, compressed cells of *textura angularis*. *Hamathecium* comprising filiform, septate, hyaline paraphyses which are longer than asci. *Asci* 8-spored, unitunicate, cylindrical to fusiform, short pedicellate, apex rounded with a J-apical ring. *Ascospores* biseriate to overlapping biseriate, oval to ellipsoid, hyaline, medianly 1-septate, multiguttulate, with appendages. *Appendages* at both apical and basal ends, long, thread-like, covered by loose capsule. Asexual morph: Ceolomycetous. Sporulate on PDA at 20 °C after 1 mo, crowded at colony margin, appears at pale yellow bubbles when release the conidial mass. *Conidiomata* globose, erumpent, black. *Peridium* comprising thick-walled, pale brown cells of *textura angularis*. *Conidiophores* ampuliform, septate, branched, hyaline. *Conidiogeneous cells* phialidic, terminal, cylindrical, elongate, hyaline. *Conidia* fusiform, unicellular, hyaline, smooth.

Type species: *Hyaliappendispora galii* Senan., Camporesi & K.D. Hyde.

Hyaliappendispora galii Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821549. Facesoffungi number FoF03474. Fig. 14.

Etymology: The name reflects the host genus *Galium*.

Saprobic on dead stem of *Galium* sp. Sexual morph: *Ascomata* 395–450 µm high, 180–200 µm wide ($\bar{x}$ = 419 × 190 µm, n = 10), solitary to aggregated, immersed, globose to subglobose, black to brown, coriaceous, ostiolate, papillate. *Papilla* 160–210 µm high, 100–185 µm wide ($\bar{x}$ = 172 × 158 µm, n = 10), short, wide, internally covered by hyaline periphyses. *Peridium* 15–25 µm wide ($\bar{x}$ = 20 µm, n = 10), comprising outer, dark brown, thick-walled cells of *textura angularis* and inner, thin-walled, hyaline, compressed cells of *textura angularis*. *Hamathecium* comprising filiform, septate paraphyses 1.5–3.5 µm wide ($\bar{x}$ = 2 µm, n = 10), which are longer than asci. *Asci* 110–125 × 20–25 µm ($\bar{x}$ = 116 × 21 µm, n = 20), 8-spored, unitunicate, cylindrical to fusiform, short pedicellate, apex rounded with a J- apical ring. *Ascospores* 20–25 × 7–10 µm ($\bar{x}$ = 22 × 9 µm, n = 20), biseriate to overlapping biseriate, oval to ellipsoid, hyaline, medianly 1-septate, multiguttulate, with appendages. *Appendages* 6–11 × 2–3 µm ($\bar{x}$ = 8 × 2.3 µm, n = 10), at both ends, long, thread-like, covered by loose capsule. Asexual morph: Ceolomycetous. Sporulate on PDA at 18 °C after 1 mo, crowded at colony margin, appears at pale yellow bubbles when release the conidial mass. *Conidiomata* globose, erumpent, black. *Peridium* comprising thick-walled, pale brown cells of *textura angularis*. *Conidiophores* 10–15 × 1.5–2.5 µm ($\bar{x}$ = 13 × 2.1 µm, n = 10), ampuliform, septate, branched, hyaline. *Conidiogeneous cells* 8–16 × 1.5–3 µm ($\bar{x}$ = 11 × 2.5 µm, n = 20), phialidic, terminal, cylindrical, elongate, hyaline. *Conidia* 7.5–9.5 × 1.5–2.5 µm ($\bar{x}$ = 8.3 × 2.2 µm, n = 20), fusiform, unicellular, hyaline, smooth.

Culture characteristics: Colonies growing on PDA incubated at 18 °C attaining 1 cm diam within 14 d, irregular, undulate, umbonate, whitish ash clots with tightly arranged, short, aerial mycelium, erumpent, globose, pale brownish, with viscous droplets produced after 7 d, when colonies incubate further, conidiomata arised on culture media, concentrated at colony margin, appears as black, coriaceous bubles at the beginning and later become yellow, slimy bubbles with conidial mass.

Specimen examined: **Italy**, Province of Arezzo, Quota, near Casuccia di Micheli, on dead stem of *Galium* sp. (*Rubiaceae*), E. Camporesi, 8 Jun. 2015, IT 2925 (**holotype** MFLU 15–2269, **isotype** BBH 42450, culture ex-type MFLUCC 16–1208).

Notes: *Hyaliappendispora* is morphologically distinct from other genera in *Diaporthaceae* in having biguttulate, uniseptate, hyaline ascospores with long filamentous apical and basal appendages and wall of the appendages makes a ring-like ornamentation at the proximal end. Phylogenetically *Hyaliappendispora galii* forms a fully-supported distinct clade that is sister to *Phaeodiaporthe* (Fig. 1, Clade 14).

Chaetoconis polygoni (Ellis & Everh.) Clem., Gen. fung. (Minneapolis): 176. 1909. Facesoffungi number FoF03475. Fig. 15.
Synonym: *Amphorula polygoni* (Ellis & Everh.) Petr., Sydowia 13: 181. 1959.

Saprobic on stem of *Rumex acetosa*. Sexual morph: Undetermined. Asexual morph: *Conidiomata* 175–250 µm high, 200–275 µm diam ($\bar{x}$ = 200 × 250 µm, n = 20), pycnidial, scattered, immersed to erumpent, globose to sub-globose, dark brown, unilocular or multilocular, ostiolate, papillate. *Peridium* 20–30 µm thick, comprising several layers of inner thin-walled, hyaline, compressed cells of *textura angularis* and outer, thick-walled, dark brown cells of *textura angularis*. *Ostiole* one or more, circular. *Conidiophores* 12–25 × 2–3.5 µm ($\bar{x}$ = 20 × 3 µm, n = 20), hyaline, branched, septate, smooth, with acropleurogenous conidia, formed from the inner pycnidial wall cells. *Conidiogenous cells* 30–45 × 9–11 µm ($\bar{x}$ = 32 × 9.5 µm, n = 20), enteroblastic, phialidic, determinate, integrated, cylindrical, hyaline, smooth, with minute channel and collarette. *Conidia* 35–50 × 4–5 µm ($\bar{x}$ = 37 × 4.5 µm, n = 20), hyaline, 2-euseptate, continuous, base obtuse, apex extended into a filiform, cellular, unbranched appendage, thin-walled, smooth, guttulate, obclavate.

Specimen examined: **Germany**, on the edge of a mixed forest, 39 m asl, sandy, acid, fresh, mesotroph, on stem of *Rumex acetosa* (*Polygonaceae*), 9 May 2013, RK. Schumacher, CHUNI 73, MFLU 17–0965.

Notes: *Chaetoconis polygoni* has quite different morphological characteristics compared to other taxa in *Diaporthaceae*. Molecular analyses in this study showed that our collection clustered together with *C. polygoni* (CBS 405.95; Fig 1, Clade 14). However, we could not obtain a culture and therefore extracted DNA directly from the sporocarps. The sexual morph of *Chaetoconis polygoni* was reported as *Ceriospora polygonacearum*

(Barney *et al*. 2006) which was assigned to *Sordariales* (Campbell *et al*. 2003) and later Senanayake *et al*. (2015) reassigned it to *Xylariales*. However, morphologically *Ceriospora polygonacearum* does not show any affinity to *Diaporthales*.

Diaporthe litoricola Senan., E.B.G. Jones & K.D. Hyde, **sp. nov.** MycoBank MB821550. Facesoffungi number FoF03476. Fig. 16.

Etymology: The name is based on the Latin words "litore" and "cola" meaning "beach-loving" since this fungus was collected from dead branches of beach plants.

Saprobic on dead stem of sea-shore plants. Sexual morph: *Ascomata* 800–900 μm high, 450–600 μm diam (x̄ = 880 × 475 μm, n = 20), solitary, scattered, immersed, globose to subglobose, dark brown, coriaceous, ostiolate, papillate. *Papilla* 380–430 μm high, 110–140 μm diam (x̄ = 420 × 130 μm, n = 20), conspicuous, long, black, with pale yellow apex, brown, unbranched seta in apex, internally covered by hyaline, filamentous periphyses. *Peridium* 7–12 μm wide, (x̄ = 9.3 μm, n = 20), comprising several layers of compressed, thick-walled, olivaceous to brown cells of *textura angularis*. *Hamathecium* aparaphysate or sometimes with a few cellular paraphyses. *Asci* 80–90 × 11–12 μm (x̄ = 87.5 × 11.1 μm, n = 20), 8-spored, unitunicate, cylindrical, pedicellate, apex rounded, with bilobed, distinct apical ring. *Ascospores* 16–19 × 4.5–5 μm (x̄ = 18 × 4.8 μm, n = 20), biseriate, fusiform to ellipsoid, 1-septate, hyaline, guttulate. Asexual morph: *Conidiomata* 500–900 μm high, 800–1 000 μm diam (x̄ = 880 × 900 μm, n = 20), produced on PDA when incubated at 18 °C after 4 wk, pycnidial, globose, initially immersed, erumpent at maturity, black, coriaceous, elongated neck, often yellowish white, with conidial cirrus extruding from ostiole. *Conidiomatal wall* comprising pale brown, thick-walled cells of *textura angularis*. *Conidiophores* 5–7 × 4–7 μm (x̄ = 6.3 × 5.3 μm, n = 20), ampulliform, straight to sinuous, unbranched, hyaline to olivaceous, smooth. *Conidiogenous cells* 14.5–21 × 1.8–2.8 μm (x̄ = 17.3 × 2.3 μm, n = 20), phialidic, terminal, cylindrical, slightly tapering towards the apex. *Hamathecium* aparaphysate. *Alpha conidia* 13–16 × 2.8–3.8 μm (x̄ = 14.7 × 3.3 μm, n = 20), aseptate, hyaline, smooth, ovate to ellipsoidal, base subtruncate, often biguttulate. *Beta conidia* 1.5–2 × 18–38 μm (x̄ = 1.7 × 24 μm, n = 20), fusiform to hooked, base sub-truncate, aseptate, hyaline, smooth.

Culture characteristics: Colonies growing on PDA attained 1 cm diam within 7 d when incubated at 18 °C, flat, circular, smooth, white, slightly woolly, tightly attached to media, mycelial ends unbranched.

Specimen examined: **UK**, Hampshire, Eastney shore, on stem of undetermined sea-shore plant, 20 Mar. 2016, E.B.G. Jones, GJ 242 (**holotype** MFLU 17–0874, **isotype** BBH 42436, cultures ex-type MFLUCC 16–1195, MFLUCC 17–1657).

Notes: *Diaporthe litoricola* differs morphologically from *D. maytenicola* in having large, multi-guttulate ascospores, cylindrical asci, deeply immersed, long papillate, solitary ascomata and elongate, fusiform to cylindrical alpha conidia. Phylogenetically this fungus is closely related to *Diaporthe maytenicola*, *D. decedens* and *D. nobilis*. *Diaporthe litoricola* forms a moderately-supported clade in this study (Fig 1, Clade 14).

Diaporthe rudis (Fr.) Nitschke, Pyrenomycetes Germanici 2: 282. 1870. Facesoffungi number FoF03477. Fig. 17.

Saprobic on dead umbelliferous stems. Sexual morph: *Clypeus* appears as black, wide patches, forming a black mat on substrate connecting all the ascomata and spread around the individual ascomata. *Ascomata* 540–620 μm high, 250–275 μm wide (x̄= 590 × 260 μm, n = 10), solitary or rarely aggregated, erumpent, globose to subglobose, black, coriaceous, ostiolate, papillate. *Papilla* 290–375 μm high, 75–95 μm wide (x̄ = 330 × 85 μm, n = 10), long, asymmetrically located, straight or curved, internally covered by hyaline periphyses, with apex of papilla pale brown, swollen, blunt, sometimes slightly covered by black, mycelial mat. *Peridium* 11–16 μm wide (x̄ = 14 μm, n = 10), comprising thick-walled, brown, compressed cells of *textura angularis*. *Hamathecium* aparaphysate. *Asci* 43–46 × 11–12 μm (x̄ = 43 × 11.6 μm, n = 10), 8-spored, unitunicate, clavate to fusiform, sessile, apex rounded, with a characteristic, bilobed, J- apical ring. *Ascospores* 11–13 × 3–4.5 μm (x̄ = 12 × 3.9 μm, n = 10), biseriate, fusiform to elongate ellipsoid, 1-median septate, with each cell containing two guttules, hyaline, smooth-walled. Asexual morph: Undetermined.

Culture characteristics: Colonies growing on PDA attaining 2.5 cm diam within 10 d when incubated at 18 °C, circular, entire, flat, white, tightly attached to the media, aerial mycelia less or sparse, forming few, erumpent, globose, black, viscous droplets after 7 d.

Specimen examined: **UK**, Hampshire, Winchester, Whiteley, Botley Wood, on umbelliferous stem, 25 May 2016, E.B.G. Jones, GJ 301 (MFLU 17–0895, BBH 42452, living cultures MFLUCC 16–1197, MFLUCC 17–1658).

Notes: *Diaporthe rudis* was epitypified by Udayanga *et al*. (2014) based on morphology and phylogeny. *Diaporthe rudis* has a broad host range. This collection was obtained from umbelliferous woody stems and it forms very long, curved, narrow, papilla deeply immersed in substrate. They appear as pale yellow spots with black margins. Ostioles are blunt and covered by pale yellow cells. However, the base of the ascomata is immersed in deep layers of substrate. All *D. rudis* cluster together and phylogenatically related to *D. cynaroidis* and *D. cassines*. The phylogenetic affinities of these species are still unclear, but morphologically they are differing in terms of asci and ascospore morphology and size.

Diaporthe eres Nitschke, Pyrenomycetes Germanici 2: 245. 1870. Fig. 18.

Saprobic on stem of *Fraxinus pennsylvanica.* Sexual morph: Not observed. Asexual morph: *Conidiomata* 125–140 µm high, 265–300 µm diam at base (x̄ = 135 × 280 µm, n = 10), pycnidial, pyriform, initially immersed, erumpent at maturity, globose to pyriform, black, coriaceous, elongated neck, often with yellowish white, conidial cirrus extruding from ostiole. *Conidiomatal wall* 34–36 µm diam (x̄ = 35 µm, n = 10), parenchymatous, consisting of 4–7 layers of pale brown, thick-walled cells of *textura angularis*. *Conidiophores* 4–6 × 4.5–8 µm (x̄ = 4.6 × 6.6 µm, n = 20), ampulliform, straight to sinuous, unbranched, hyaline, smooth. *Conidiogenous cells* 8–14 × 1.5–3 µm (x̄ = 11.2 × 2.2 µm, n = 20), phialidic, terminal, cylindrical, slightly tapering towards the apex. *Hamathecium* aparaphysate. *Alpha conidia* 5.8–7.5 × 2.5–3.5 µm (x̄ = 6.4 × 2.8 µm, n = 10), aseptate, hyaline, smooth, ovate to ellipsoidal, base subtruncate, often biguttulate. *Beta conidia* not seen.

Culture characteristics: Colonies growing on MEA attenuated 2 cm within 10 d incubated at 18 °C, fast growing, entire, flat circular, white, with radially arranged minute mycelium clots later becoming creamy or pale yellow.

Specimen examined: **Russia**, Cotton Fabric urban micro district, on stem of *Fraxinus pennsylvanica* (*Oleaceae*), 14 May 2015, T.S. Bulgakov, T-400 (MFLU 15–2104, MFLU 17–0890, living cultures MFLUCC 17–1667, MFLUCC 17–1668).

Notes: Phylogeny depicts a close association between the two *D. eres* strains collected from *Fraxinus pennsylvanica.* In this study, *D. eres* has been treated as a “complex”. It is noted herein that combined gene phylogeny also support such a complex as strains from different hosts/ regions are phylogenetically apart. We did not see beta conidia for this strain on the host or in culture.

Erythrogloeaceae Senan., Maharachch. & K.D. Hyde, **fam. nov.** MycoBank MB821551. Facesoffungi number FoF03478. Clade 9.

Folicolous associated with leaf spots. Sexual morph: Undetermined. Asexual morph: *Conidiomata* epiphyllous, subepidermal, sometime eustromatic, acervular or subglobose, brown to black or yellow-orange, amphigenous, opening by irregular rupture, wall of 2–6 layers of orange-brown *textura angularis*, exuding slimy orange masses of conidia. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* lining the inner cavity of conidioma, hyaline to olivaceous, smooth, subcylindrical to ampulliform, tapering to a long, thin neck, at times apical part elongated into a long neck, proliferating several times percurrently near apex, with flaring collarettes, or apex truncate, with minute periclinal thickening. *Conidia* hyaline to olivaceous, smooth, guttulate or not, thin-walled, ellipsoid, fusoid, ovoid to somewhat obclavate, straight to curved, apex subobtuse, obtusely rounded, base truncate, with prominent marginal frill, or dimorphic, intermixed in same conidiomata. *Macroconidia* broadly ellipsoid to obovoid, hyaline, smooth, granular to guttulate, thick-walled, apex obtuse, base flattened. *Microconidia* hyaline, smooth, guttulate, fusoid-ellipsoid, acutely rounded at apex, truncate at base.

Type genus: *Erythrogloeum* Petr.

Type species: *Erythrogloeum hymenaeae* Gonz. Frag. & Cif. ex Petr.

Notes: Phylogenetic analyses from the current study based on combined LSU nrDNA, ITS nrDNA, *rpb2*, and *tef1* sequences showed that *Chrysocrypta* is basal to *Disculoides* and *Erythrogloeum* (Fig. 1, Clade 9). *Chrysocrypta* has previously been accommodated in the *Cryphonectriaceae* but the latter is distantly related (Fig. 1, Clade 6). Morphologically members of clade 9 depicts distinct characters in having epiphyllous acervuli, and subcylindrical to ampulliform conidiogenous cells. The sexual morphs of those taxa have not been reported. *Disculoides* was introduced and typified by *Disculoides eucalyptorum* (Crous *et al*. 2012a). *Disculoides eucalyptorum* was shown to be distinct from *Erythrogloeum hymenaeae*, which was sister to the *Greeneria*-*Melanconiella* complex based on rDNA sequence gene analyses (Crous *et al*. 2012a).

Chrysocrypta was introduced based on *Chrysocrypta corymbiae*, which was isolated from leaves of *Corymbia* species. *Chrysocrypta* is similar to *Foliocryphia* (*Cryphonectriaceae*), but is distinct in forming dimorphic conidia. Crous *et al*. (2012c) accommodated this taxon in *Cryphonectriaceae* based on morphology and rDNA sequence phylogeny. However, stromatic tissues of *Chrysocrypta corymbiae* do not turn purple with KOH, which is a basic characteristic of *Cryphonectriaceae.* In addition, DNA sequence data herein indicate that *Chrysocrypta corymbiae* does not belong in *Cryphonectriaceae.* Hence given the morphological distinctiveness and strongly supported clade (9), a new family *Erythrogloeaceae* is introduced to accommodate *Chrysocrypta*, *Disculoides* and *Erythrogloeum.*

Erythrogloeum hymenaeae Gonz. Frag. & Cif. ex Petr., Sydowia 7: 379. 1953. Facesoffungi number FoF03479. Fig. 19.

Folicolous, associated with leaf spots. Sexual morph: Undetermined. Asexual morph: *Conidiomata* up to 250 µm diam, acervular, epiphyllous, eustromatic, subepidermal, solitary, rupturing surface by irregular splits. *Peridium* comprises thin-walled cells of *textura angularis. Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 5–10 × 2.5–4 µm, hyaline, smooth, phialidic with periclinal thickening, discrete, lageniform to cylindrical, lining the inner walls of cavity. *Conidia* 7–9 × 2.5–3 µm, hyaline, smooth, guttulate or not, thin-walled, ellipsoid to ovoid, apex obtusely rounded, tapering to a truncate base (description based on Crous *et al*. 2012a).

Specimen examined: **Costa Rica**, San José, on leaves of *Hymenaea courbaril*, Nov. 1929, H. Schmidt (F45468 **syntype**).

Notes: The monotypic genus *Erythrogloeum* comprises the type species *Erythrogloeum hymenaeae*, which is validly described based on *Phyllosticta hymenaeae* by Petrak (1953). *Erythrogloeum hymenaeae* is associated with a severe anthracnose of apical twigs and seedlings of *Hymenaeae* species (Ferreira *et al*. 1992). This fungus has been reported from in Brazil and Costa Rica.

Gnomoniaceae G. Winter [as '*Gnomonieae*'], Rabenh. Krypt.-Fl., Edn 2 (Leipzig) 1.2: 570. 1886. Clade 1.

Saprobic on bark and leaves of overwintered plants. Sexual morph: *Stromata* lacking, or poorly to well-developed, scattered, erumpent, pustuliform with one or rarely two ascomata or valsoid, broadly elliptic to rounded, large. *Ectostromata* well-developed, brown to black, thick ectostromatic disc at perithecial necks. *Ascomata* immersed to erumpent, solitary or aggregated, globose to subglobose, black, coriaceous, thin-walled, with one or more long, central or eccentric necks with hyaline periphyses. *Peridium* comprising few layers of brown, thick-walled cells of *textura angularis*. *Hamathecium* comprising few hyaline, septate, cellular paraphyses. *Asci* 8–32-spored, unitunicate, oval, fusiform to almost filiform, short pedicellate, with a distinct, J-apical ring. *Ascospores* biseriate, overlapping uniseriate to fasciculate, oval, fusiform, ovoid to subulate, small, unicellular to 1-septate, rarely multi-septate, ends mostly rounded, rarely pointed, appendages absent or subulate, navicular or whip-shaped, smooth. Asexual morph: *Conidiomata* acervulal or pycnidial, subcuticular, papillate or not, oblate to globose, black, thick-walled, with one chamber containing whitish conidial mass. *Conidiophores* simple, filiform to fusiform, annellation visible or invisible, densely branched. *Conidiogenous cells* usually phialidic, rarely with a few annellidic scars, irregular in shape, lageniform to cylindrical, gradually tapering to ends for one quarter to three-quarters of their length, or abruptly narrowing to long neck at about half of the phialide length, or abruptly narrowing at apex, straight or curved, sometimes asymmetric swollen nodes, proliferating into other conidiogenous cells at basal or middle part. *Conidia* broadly ellipsoid to oval, sometimes obovoid, allantoid, occasionally curved or sinuate to slightly angular, hyaline, often unicellular.

Type genus: *Gnomonia* Ces. & De Not.

Type species: *Gnomonia gnomon* (Tode) J. Schröt.

Notes: *Gnomoniaceae* (Fig. 1, Clade 1) was introduced by Winter (1886). This family is characterised by immersed, rarely erumpent or superficial ascomata, without a stroma or aggregated with a rudimentary stroma. Species in *Gnomoniaceae* inhabit various hosts and substrates, including herbaceous plants, shrubs and trees as endophytes, pathogens and saprobes (Rossman *et al*. 2007, Walker *et al*. 2012). Pathogenicity of gnomoniaceous taxa is quite diversified, causing various diseases on plants. However, most gnomoniaceous species are restricted to overwintered plants in temperate and subtropical biomes.

Maharachchikumbura *et al*. (2015) accommodated 33 genera in *Gnomoniaceae*. Additionally, we introduce a new genus *Marsupiomyces* based on *M. quercina* and the second species *M. epidermoidea*. However, we exclude five genera from the family based on morphology and phylogeny and also included the additional genera *Mamianiella* and *Marsupiomyces* within this family. Hence, we accept 30 genera in this family: *Alnecium*, *Ambarignomonia*, *Amphiporthe*, *Anisomyces*, *Apiognomonia*, *Apioplagiostoma*, *Asteroma*, *Bagcheea*, *Cryptosporella*, *Cylindrosporella*, *Diplacella*, *Ditopella*, *Ditopellopsis*, *Gloeosporidina*, *Gnomonia*, *Gnomoniella*, *Gnomoniopsis*, *Mamianiella*, *Marsupiomyces*, *Millerburtonia*, *Occultocarpon*, *Ophiognomonia*, *Phragmoporthe*, *Phylloporthe*, *Plagiostoma*, *Pleuroceras*, *Sirococcus*, *Spataporthe*, *Uniseta* and *Valsalnicola*. Here we introduce, describe and illustrate new fungal taxa which belong to *Gnomoniaceae*.

Doubtful genera or genera excluded from *Gnomoniaceae*

Anisogramma was introduced and typified by *Anisogramma virgultorum*, and almost all characters of this genus are similar to *Mamianiella*. De Silva *et al*. (2009) analysed the phylogenetic relationship of *Anisogramma* species based on LSU nrDNA sequence data and reported its placement outside of *Gnomoniaceae*. Both *Mamianiella* and *Anisogramma* commonly occur on *Corylus* species. Combined LSU nrDNA, ITS nrDNA, *rpb2* and *tef1* gene analyses of the present study show that *Mamianiella* is nested in between *Anisogramma* species. Morphological comparison also reveals that both genera are chracterised by *Mamianiella* and hence *Mamianiella* does not warrant generic status with high bootstrap support value (Fig. 1, Clade 1). *Mamianiella* is an older name than *Anisogramma*. Therefore, we synonymise *Anisogramma* under *Mamianiella* giving priority to the older name. *Mamianiella* Höhn. was introduced and typified by *M. coryli*, (based on *Sphaeria coryli*) and *Mamiania* was introduced and typified by *M. fimbriata* (based on *Sphaeria fimbriata*). Von Arx & Muller (1954) suggested to retain both genera as one genus. However, Barr (1978) separated these two genera based on ascospore morphology as *Mamianiella* has unicellular ascospores, while *Mamiania* produces apiosporous ascospores. This is, however, not a strong character to differentiate these two genera, while almost all other characters are similar to each other. Hence, we synonymise *Mamiania* under *Mamianiella* giving priority to the older name *Mamianiella*.

Clypeoporthe, was reduced to synonymy in *Gnomonia* by Monod (1983). However, some species in this genus have eutypelloid configuration of ascomata in parenchymatous stromatic tissues. However, it is necessary to obtain DNA sequence data to resolve this genus. *Depazea* was typified by *D. frondicola* and it was assigned to *Mycosphaerellaceae* as *Sphaerulina frondicola* (Verkley *et al*. 2013). Hence, we exclude *Depazea* form *Gnomoniaceae.*

Phylloporthe, a plant parasitic, monotypic genus was introduced and is typified by *P. vernoniae*. There is no molecular data for *P. vernoniae* and it is not clear whether this genus belongs to *Gnomoniaceae* or not. Hence, we maintain this genus in *Gnomoniaceae* until molecular data for the type species are available.

Skottsbergiella was introduced and typified by *Skottsbergiella diaporthoides* which has large perithecia immersed in massive, externally crustose, pseudoparenchymatous stromata. Petrak (1971) assigned this genus to eutypoid fungi based on its stromatic consistency. This genus is morphologically similar to *Diaporthella,* which is placed in *Diaporthales incertae sedis* (Barr 1978). *Skottsbergiella diaporthoides* was renamed as *Diaporthe diaporthoides* and accommodated in *Diaporthaceae* (Barr 1978). Hence *Skottsbergiella* is not a valid genus.

Xenotypa is typified by *X. aterrima.* We observed a specimen of *X. aterrima* (as *Hydnum aterrima*, from S under accession no: F130640) on account of the elongated allantoid ascospores and solitary to aggregated ascomata, this taxon has closer affinity to *Cytosporaceae* than *Gnomoniaceae*. Hence, we exclude *Xenotypa* from *Gnomoniaceae* and include it in *Cytosporaceae*, until molecular data is available to confirm the placement.

Zythia is typified by *Z. resinae* which is synonymised under *Sarea resinae*. Molecular data demonstrate a placement of *Sarea resinae* within *Trapeliaceae* (*Baeomycetales*, *Ostropomycetidae*). Therefore, here we exclude *Zythia* from *Gnomoniaceae*. However, *Z. fragariae* shows an affinity to *Gnomoniaceae*. It is a common parasite on strawberry and Shipton)1967 (reported *Zythia fragariae* as the asexual morph of *Gnomonia fragariae*. Walker *et al.* (2010) synonymised *Gnomonia fragariae* in *Gnomoniopsis* as *G. comari.* Hence *Zythia* is not considered to be a genus in *Gnomoniaceae.*

Plagiostoma salicicola Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821552. Facesoffungi number FoF03480. Fig. 20.

Etymology: Based on the host genus *Salix* on which this fungus occurs and the Latin “-cola” which means loving.

Saprobic on dead twigs of *Salix* sp. Sexual morph: *Stromata* loosely packed comprising pseudoparenchymatous tissues. *Ascomata* 400–600 µm high, 250–400 µm diam (x̄ = 580 × 300 µm, n=20), perithecial, aggregated in groups of 3–10, immersed, oblate globose when moist and become convex with irregular dents around base of papilla when dry, coriaceous, black, ostiolate, papillate. *Necks* 420–700 µm long, 100–150 µm wide at base, 60–150 µm wide at apex, converged or not, eccentric to marginal, slightly curved. *Asci* 45–70 × 10–20 µm (x̄ = 62 ×

16 µm, n = 20), 8-spored, unitunicate, fusiform, apex narrowly obtuse, sessile, with J- apical ring. *Ascospores* 15–25 × 4–7 µm (x̄ = 17 × 6 µm, n = 20), obliquely biseriate to fasciculate, ellipsoidal to fusiform, medianly 1-septate, constricted or not at the septum, ends rounded to tapering, with upper cell slightly wider than basal cell, hyaline. Asexual morph: Undetermined.

Culture characteristics: Colonies growing on PDA attained 1 cm within 10 d incubated at 18 °C, circular, umbonate, undulate, white median region with ash outer margin, woolly, loosely attached to the substrate.

Specimen examined: **Italy**, Province of Trento, Val di Sole, near Croviana, on dead branch of *Salix* sp., 29 Jul. 2013, E. Camporesi, IT 1394 (**holotype** MFLU 17–0878, **isotype** BBH 42440, cultures ex-type MFLUCC 13–0656); Province of Trento, Val di Sole, near Croviana, on dead branch of *Salix* sp., 29 Jul. 2013, E. Camporesi, IT 1394 (**paratype** MFLU 15–2261, living cultures MFLUCC 17–1666).

Notes: Mejía *et al.* (2011) revisited the genus *Plagiostoma* and observed distinct grouping pattern of *Plagiostoma* species with expanded necks and species with cylindrical necks on *Salicaceae*. With species with expanded necks, *P. salicicola* is morphologically similar to *Plagiostoma dilatatum.* However, *P. dilatatum* has relatively small ascomata with short necks and long-pedicellate, cylindrical asci. The combined gene sequence analyses herein indicate a relationship of *P. salicicola* with other species of *Plagiostoma* separated with moderate support values, but sufficiently distinct of *P. dilatatum* (Fig. 1, Clade 1).

Plagiostoma jonesii Senan., & K.D. Hyde, **sp. nov.** MycoBank MB821553. Facesoffungi number FoF03481. Fig. 21.

Etymology: In honour of Prof. Gareth Jones, an eminent mycologist who collected this species.

Saprobic on umbelliferous stems. Sexual morph: *Ascomata* 380–420 µm high, 250–280 µm diam (x̄ = 400 × 270 µm, n = 10), solitary or rarely aggregated, erumpent, globose to subglobose, black, coriaceous, ostiolate, papillate. *Papilla* 165–260 µm high, 70–100 µm wide (x̄ = 200 × 80 µm, n = 10), short, symmetrically or asymmetrically located, narrow at the base, widening towards the top, straight or curved, internally covered by hyaline periphyses. *Peridium* 15–25 µm wide (x̄ = 18.5 µm, n = 10), comprises thick-walled, brown, compressed cells of *textura porrecta*. *Asci* 40–50 × 8.5–9.5 µm (x̄ = 48 × 8.8 µm, n = 10), 8-spored, unitunicate, fusiform to clavate, apex with J-, bilobed, distinct apical ring, short pedicellate. *Ascospores* 12–14 × 2.6–3.8 µm (x̄ = 13 × 3.2 µm, n = 10), biseriate, fusiform to ellipsoid, hyaline, 1-septate, with two globules in each cell, with small spine-like appendages at both ends. Asexual morph: Undetermined.

Culture characteristics: Colonies growing on PDA attenuated 1 cm within 7 d, incubated at 18 °C, fast-growing, flat, circular, smooth, less in aerial mycelia, white, tightly attached to the medium.

Specimen examined: **UK**, Sussex Ocidental, Arundel, river bank, on umbelliferous stem, 17 Feb. 2016, E.G.B. Jones, GJ 227 (**holotype** MFLU 17–0873, **isotype** BBH 42435, cultures ex-type MFLUCC 16–1189, MFLUCC 17–1654).

Notes: *Plagiostoma jonesii* is morphologically and phylogenically distinct from other *Plagiostoma* species in having long, curved papilla arising out from the substrate appearing as spines and the opening is wider than base, ellipsoid to fusiform, 1-septate, slightly or non-constricted ascospores with small, appendages. Our phylogeny shows that *Plagiostoma jonesii* is phylogenetically close to *P. salicellum* and *P. populinum*, but morphologically distinct from both species.

Gnomoniopsis agrimoniae Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821554. Facesoffungi number FoF03482. Fig. 22.

Etymology: Species epithet based on the host genus *Agrimonia*.

Saprobic on dead stems of *Agrimonia eupatoria.* Sexual morph: *Ascomata* 200–320 µm high, 245–400 µm diam (x̄ = 273 × 332 µm, n = 20) solitary, scattered, erumpent, globose, black, coriaceous, ostiolate, papillate. *Papilla* 100–170 µm high, 70–105 µm diam (x̄ = 160 × 80 µm, n = 20), short, comprising elongate brown cells of *textura porrecta*. *Peridium* 35–45 µm (x̄ = 39 µm, n = 10) comprising inner, hyaline, compressed cells of *textura angularis* and outer, brown, thick-walled, cells of *textura globosa*. *Asci* 28–32.5 × 5–5.5 µm (x̄ = 30.5 × 34.9 µm, n = 20), 8-spored, unitunicate, cylindrical to fusiform, short-pedicellate, apex obtuse with bilobed, J- apical ring. *Ascospores* 7–8 × 1.8–2.2 µm (x̄ = 7.5 × 2.1 µm) overlapping uni- to biseriate, apiosporous, hyaline, uniseptate, smooth-walled. Asexual morph: Undetermined.

Culture characteristics: Colonies growing on MEA becoming 2 cm within 7 d incubated at 18 °C, fast growing, circular, smooth mycelia concentrated at margins making a concave colony, off white, loosely attached to the substrate, wooly.

Specimen examined: **Italy**, Province of Forlì-Cesena, near Santa Sofia, on dead stem of *Agrimonia eupatoria* (*Rosaceae*), 5 Apr. 2014, E. Camporesi, IT 1798 (**holotype** MFLU 17–0884, **isotype** BBH 42446, cultures ex-type MFLUCC 14–0844, MFLUCC 17–1662).

Notes: *Gnomoniopsis agrimoniae* has minute asci and ascospores compared to the other *Gnomoniopsis* species. Coriaceous, thick-walled ascomata and small apiosporous ascospores are prominent characters in this genus. Our combined gene analyses indicate a moderately supported phylogenetic distinction of *Gnomoniopsis agrimoniae* from other species with moderate support. Phylogeny analyses based on ITS sequence data following Walker *et al*. (2010) reported that *Gnomoniopsis agrimoniae* is distinct from other *Gnomoniopsis* species. *Gnomoniopsis* species are considered host specific and only *Gnomoniopsis agrimoniae* and *G. guttulata* are reported on *Agrimonia* species.

Apiognomonia veneta (Sacc. & Speg.) Höhn., Hedwigia 62: 47. 1920. Facesoffungi number FoF03483. Fig. 23.
Basionym: *Laestadia veneta* Sacc. & Speg., Michelia 1(no. 3): 351. 1878.

Pathogenic on living leaves of *Platanus acerifolia*. Sexual morph: Undetermined. Asexual morph: *Conidiomata* 180–200 µm high, 250–265 µm diam ($\bar{x}$ = 188 × 260 µm, n = 10), acervular, irregularly round or oval, erumpent to immersed, solitary, scattered, conidiogenous layer covering the entire inner surface of acervular chambers and mostly in basal layer, yellowish-brown, initially developing under epidermis, then breaking through epidermis and forming thick whitish amorphous conidial masses. *Conidiophores* 10–15 × 2.5–4.5 µm ($\bar{x}$ = 12 × 3.4 µm, n = 20), densely branched, ampulliform, hyaline. *Conidiogenous cells* 14–21 × 2.7–3.5 µm ($\bar{x}$ = 18 × 3 µm, n = 10), usually phialidic, rarely annellidic, lageniform to cylindrical, gradually tapering towards the apex, straight or curved, hyaline, smooth. *Conidia* 12–20 × 4–6 µm ($\bar{x}$ = 15.6 × 5 µm, n = 10), broadly ellipsoid to oval, sometimes obovoid, occasionally curved or sinuate to slightly angular, hyaline, thick-walled, aseptate, guttulate.

Culture characteristics: Colonies growing on MEA attenuated 1 cm within 7 d, incubated at 18 °C, flat, circular, irregular, with circular ornamentations, margins concentrated with mycelial ends, white, rich in short aerial mycelia, loosely attached to the medium.

Specimen examined: **Russia**, Rostov region, Krasnosulinsky district, Donskoye forestry, lining-out nursery, on live leaves of *Platanus acerifolia* (*Platanaceae*), 27 Oct. 2015, T.S. Bulgakov, R 1048, MFLU 15–3710, living cultures MFLUCC 16–1193, MFLUCC 17–1656.

Notes: *Apiognomonia veneta* is a common pathogen on *Platanaceae*. Here we illustrate the asexual morph of *Apiognomonia veneta*. This is a common epifoliar pathogen. We could not obtain the sexual morph in culture or from the specimen.

Marsupiomyces Senan. & K.D. Hyde, **gen. nov.** MycoBank MB821555. Facesoffungi number FoF03484.

Etymology: Refering to the ascomata located in mycelial cavity not in stromatic tissues.

Saprobic on leaves of *Fagaceae*. Sexual morph: Appearing on the surface as black solitary swellings on the leaf surface. *Ascomatal cavity* pale in colour, tightly packed cells, forming a thin coating around ascomata. *Ascomata* solitary, scattered, immersed horizontally in the lower and upper leaf epidermis, globose to subglobose, coriaceous, black, ostiolate, papillate. *Papilla* long, asymmetrically located, slanted or on substrate, curved or erect. *Peridium* comprising thick-walled, brown, large cells of *textura globulosa* or *textura epidermoidea*. *Hamathecium* aparaphysate. *Asci* 8-spored, unitunicate, fusiform, with short, pointed pedicel, apex rounded with bi-lobed, distinct, apical ring. *Ascospores* uni- to tri-seriate, fusiform, cylindrical to elongate fusiform, straight or very slightly curved, 1-septate, hyaline, guttulate, smooth-walled. Asexual morph: Undetermined.

Type species: *Marsupiomyces quercina* Senan., Camporesi & K.D. Hyde.

Notes: *Marsupiomyces* is introduced and typified by *M. quercina*. Members of this genus occur on members of *Fagaceae*. *Marsupiomyces* comprises *M. quercina* and *M. epidermoidea*. Phylogenetically *Marsupiomyces* is closely related to *Apioplagiostoma* (Fig. 1, Clade 1). However, *Apioplagiostoma* differs from *Marsupiomyces* in having leaf lesions with dark purple to brown pigmentation, and apiosporous ascospores.

Marsupiomyces quercina Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821556. Facesoffungi number FoF03485. Fig. 24.

Etymology: Species epithet based on the host genus *Quercus*.

Saprobic on leaves of *Quercus*. Sexual morph: *Stromatic cavity* pale in colour, tightly packed cells, forming a thin, coating around ascomata. *Ascomata* 150–250 µm high 160–300 µm diam (x̅ = 175 × 200 µm, n = 10) solitary, scattered, immersed horizontally in the lower and upper leaf epidermis, globose to subglobose, coriaceous, black, ostiolate, papillate. *Papilla* long, asymmetrically located, slanted or on substrate, curved or erect. *Peridium* 25–45 µm wide (x̅ = 35 µm, n = 10), comprising thick-walled, brown, large cells of *textura globulosa*. *Hamathecium* aparaphysate. *Asci* 125–150 × 9–11 µm (x̅ = 134 × 9.8 µm, n = 30), unitunicate, 8-spored, fusiform, with short, pointed pedicel, apex rounded with bilobed, distinct, apical ring. *Ascospores* 15–21 × 6–8 µm (x̅ = 17.4 × 6.6 µm, n = 40), biseriate, cylindrical to elongate fusiform, 1-septate, hyaline, guttulate. Asexual morph: Undetermined.

Specimen examined: **Italy**, Province of Forlì-Cesena, San Paolo in Alpe, Santa Sofia, dead leaves of *Quercus* sp. (*Fagaceae*), 2 May 2013, E. Camporesi, IT 1214 (**holotype** MFLU 17–0876, **isotype** BBH 42438, cultures ex-type = MFLUCC 14–0566, MFLUCC 13–0664).

Notes: The combined ITS nrDNA, LSU nrDNA, *rpb2* and *tef1* sequences analyses of this study shows that *Marsupiomyces quercina* forms a distinct clade which is sister to *Marsupiomyces epidermoidea* (Fig. 1, Clade 1).

Marsupiomyces epidermoidea Perera, Senan., Bulgakov & K.D. Hyde, **sp. nov.** MycoBank MB821557. Facesoffungi number FoF03486. Fig. 25.

Etymology: Fungal peridium comprising cells of *textura epidermoidea*.

Saprobic on dead leaves of *Quercus robur*. Sexual morph: Appearing on the surface as black solitary swellings on the leaf surface. *Ascomatal cavity* pale in colour, tightly packed cells, forming a thin, coating around ascomata. *Ascomata* 200–310 µm diam, depressed globose to irregular. *Peridium* 11–36 µm thick, comprising 3–8 layers of brown to hyaline cells of *textura epidermoidea*, outer cell layer brown to pale brown, inner cells hyaline, elongate. *Asci* 54–83 × 11–15 µm (x̅ = 71 × 14 µm, n = 25), 8-spored, unitunicate, clavate, apedicellate, with a J- refractive apical ring, lying without paraphyses. *Ascospores* 18–21 × 3–3.6 µm (x̅ = 19 × 3.4 µm, n = 30), uni- to tri-seriate, 1-septate, not constricted at the septum, broadly fusiform, rounded at both ends, straight or very slightly curved, hyaline, guttulate, smooth-walled. Asexual morph: Undetermined.

Specimen examined: **Russia**, Rostov region, Shakhty city, Maisky, Cemetery Park, (47.6922302° E, 40.0925446° N), on dried leaf of *Quercus robur* (*Fagaceae*), 21 Jun. 2015, T.S. Bulgakov, T 776 (**holotype** MFLU 15–2921, **isotype** BBH 42451).

Notes: Our new taxon, *Marsupiomyces epidermoidea* is a sister taxon to *Marsupiomyces quercina*, but sufficiently distinct. In addition, it is different from *Marsupiomyces epidermoidea* in having a distinct peridium comprising cells of *textura epidermoidea.*

Ditopella biseptata Perera, Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821558. Facesoffungi number FoF03487. Fig. 26.

Etymology: Species name refers to the ascospores that have two septa.

Saprobic on dead branch of *Alnus glutinosa*. Sexual morph: *Stromata* surrounding the perithecial necks, extending outward beneath the host periderm as a distinct clypeus, composed of dark brown thick-walled angular cells. *Ascomata* 500–900 µm diam, immersed in the ectostroma, situated between the epidermis and the cortex of the host tissue, appearing as solitary swellings of the host epidermis, sometimes epidermis ruptures to expose the rounded apex of the ostiole, perithecial, depressed globose to oval, ostiolate. *Ostiolar neck* lined with thin-walled hyaline, septate periphyses. *Peridium* 44 µm thick, 2-layered, outer layer composed of angular, sometimes slightly compressed, dark brown, thick-walled cells of *textura angularis*, inner layer of elongate, hyaline, thin-walled, compressed cells of *textura angularis*, wider around the ostiole, composed of dark brown, thick-walled cells of *textura angularis*. *Asci* 63–90 × 15–19 µm (x̅ = 79 × 18.3 µm, n = 10), 16- to 32-spored, elongate-ellipsoidal to clavate, apedicellate, with a J- refractive apical ring, lying without paraphyses. *Ascospores* 18–27 × 3–4 µm (x̅ = 23.8 × 3.6 µm, n = 30), multi-seriate, (1)2(–3)-septate, not constricted at the septum, cylindrical to narrowly ellipsoidal, straight or very slightly curved, tapering slightly to broadly rounded ends, hyaline, guttulate, smooth-walled, with 2-polar appendages. Asexual morph: Undetermined.

Specimen examined: **Italy**, Province of Forlì-Cesena, Bagno di Romagna, near Lago Pontini, on dead branch of *Alnus glutinosa* (*Betulaceae*), 26 May 2014, E. Camporesi, IT 1891 (**holotype**, MFLU 15–2661).

Notes: Here we introduce a new species *Ditopella biseptata* based on phylogeny. *Ditopella biseptata* forms a distinct clade which is sister to *Ditopella ditopa* (Fig. 1, Clade 1). Morphologically *Ditopella biseptata* has 2-septa and minute appendages at both ends. We could not obtain a culture from this fungus and extracted DNA directly from the sporocarps.

Harknessiaceae Crous, Persoonia 28: 55. 2012. Clade 7.

Saprobic or pathogenic forming leaf spots. Sexual morph: *Ascomata* perithecial, solitary or aggregated, immersed, globose, coriaceous, brown, papillate. *Papilla* emergent to depressed, wall comprising 3–5 layers of brown-walled cells of *textura angularis*. *Hamathecium* comprising hyaline, septate paraphyses. *Asci* 8-spored, unitunicate, cylindrical to clavate, short pedicellate, with J- apical ring. *Ascospores* uni- to biseriate, hyaline, ellipsoid to fusoid, aseptate, thick-walled, guttulate, smooth-walled. Asexual morph: Coelomycetous. *Conidiomata* eustromatic, pycnidial, scattered or aggregated, immersed, globose, coriaceous, with single or several locules, dark brown to black. *Peridium* comprising thin-walled, almost hyaline to brown cells of *textura angularis*. *Ostiole* wide, central, surrounded by brown cells. *Conidiophores* lining the inner cavity or reduced to the basal layer, sometimes reduced to conidiogenous cells, sometimes septate, branched. *Conidiogenous cells* holoblastic, discrete, lageniform, subcylindrical to cylindrical, hyaline to pale yellow, smooth, producing macroconidia and sometimes microconidia from same conidiogenous cell, proliferating sympodially one or several times. *Macroconidia* with a basal appendage, hyaline when young, brown at maturity, unicellular, although basal appendage separated by a septum thick-walled, smooth-walled, with or without pale and dark longitudinal bands, sometimes longitudinally striate, guttulate, basal appendage cellular, cylindrical to subcylindrical, hyaline, thin-walled, devoid of contents, apical appendage present or absent, if present elongated. *Microconidia* hyaline, oval to ellipsoid, aseptate, smooth-walled.

Type genus: *Harknessia* Cooke.

Type species: *Harknessia eucalypti* Cooke.

Notes: *Harknessiaceae* (Fig. 1, Clade 7) was introduced to accommodate *Harknessia* with its wuestneia-like sexual morph. *Harknessia* species, distributed in both tropical and temperate biomes, are associated with leaves and branches of host trees (Farr & Rossman 2001). Most pathogenic *Harknessia* species are associated with leaf spots, leaf tip dieback, leaf scorch and stem cankers (Crous *et al*. 1989, 1993), but pathogenicity has not been properly studied (Crous *et al*. 2012b). Some saprobic species have also been isolated from asymptomatic plant tissues (Marincowitz *et al*. 2008, Crous *et al*. 2017). Twenty-one of the 60 species and seven of the 13 wuestneia-like sexual morphs have been linked to *Harknessia* asexual morphs (Crous *et al*. 2012b, 2017). Ribosomal DNA sequence analysis of diaporthoid taxa revealed a distinct lineage for *Harknessia sensu stricto* within *Diaporthales* (Crous *et al*. 2012b). Crous *et al*. (2012b) introduced six novel species of *Harknessia* from *Eucalyptus* and phylogenetic relationships based on a multi-gene analysis of ITS nrDNA, calmodulin and beta-tubulin genes were provided for these species. However morphologically, *Dwiroopa lythri* has similar characters to *Harknessia* and phylogenetically it is moderately supported here. Hence, *Dwiroopa lythri* is accommodated within *Harknessiaceae* for now. Phylogeny herein, indicates support for the establishment of this family.

Harknessia eucalypti Cooke, Grevillea 9 (no. 51): 85. 1881. Facesoffungi number FoF03488. Fig. 27.

Saprobic on *Eucalyptus globulus* appearing as nearly circular, black distinct spots. Sexual morph: Undetermined. Asexual morph: *Conidiomata* 390–550 µm high, 400–600 µm diam, erumpent, scattered, pycnidial, unilocular, globose to subglobose, brown. *Peridium* 3–4 layers of brown cells of *textura angularis*. *Conidiophores* short, cylindrical, almost globose, branched, 1–2 layers, hyaline, mixed with peridium cells. *Conidiogenous cells* 8–13 × 4–6 µm, ampulliform, cylindrical, hyaline to brown. *Conidia* 11.5–15 × 8–9.5 µm ($\bar{x}$ = 13 × 8.5 µm, n = 20), globose to ovoid with a truncate apiculate apex and an obtuse to blunt base, smooth, hyaline when young, brown at maturity, with longitudinal striations along the length of some conidia. *Basal appendages* 5–15 × 1.5–3 µm ($\bar{x}$ = 10 × 2.5 µm, n = 20), hyaline, tubular, smooth, thin-walled, often collapsing.

Material examined: **USA**, California, on leaves of *Eucalyptus globulus,* Harkness 1280, **isotype** K (M) 195744.

Notes: Yuan & Mohammed (1997) observed the asexual morph of *Wuestneia epispora* from culture which was morphologically identical to *Harknessia eucalypti*, although this has not been proven based on sequences.

Harknessia is associated with leaf spots, leaf tip dieback or leaf scorch, stem cankers and is also common on leaf litter (Crous *et al*. 1989, Marincowitz *et al*. 2008).

Juglanconidaceae Voglmayr & Jaklitsch, Persoonia 38: 142. 2017. Facesoffungi number FoF03489. Clade 4.
Synonym: *Melansporellaceae* C.M. Tian *et al.* Phytotaxa 305: 194. 2017.

Saprobic on dead corticated twigs and branches of *Juglandaceae* species. Sexual morph: *Pseudostromata* inconspicuous, ectostromatic disc pale yellow to pale brown, causing a more or less postulate bark surface. *Central column* more or less conical, beneath the disc. *Ascomata* surrounding the ectostromatic disc, with long, asymmetrical or symmetrical, lateral ostioles that emerge at the margin or within the ectostromatic disc, globose to subglobose, coriaceous, black. *Hamathecium* comprising hyaline paraphyses which deliquesce at maturity. *Asci* 8-spored, unitunicate, with a distinct apical ring, sessile. *Ascospores* hyaline, bicellular, with or without gelatinous appendages. Asexual morph: melanconium-like. *Conidiomata* acervular, with ectostromatic disc and central column. *Conidiophores* aseptate or few-celled, smooth, hyaline to brown. *Conidiogenous cells* annellidic, cylindrical, base swollen, hyaline to brown. *Conidia* ellipsoid to oval, brown, with gelatinous sheath. *Conidial wall* smooth on the outer surface, with inconspicuous to distinct irregular verrucae on the inner surface (description based on Voglmayr *et al*. 2017).

Type genus: *Juglanconis* Voglmayr & Jaklitsch.

Type species: *Juglanconis juglandina* (Kunze) Voglmayr & Jaklitsch.

Notes: *Juglanconidaceae* (Fig. 1, Clade 4) was introduced by Voglmayr & Jaklitsch (2017) based on *Melanconium juglandinum.* This family comprises *Juglanconis juglandina*, *J. oblonga*, *J. pterocaryae*, and *J. appendiculata*. *Juglanconidaceae* is morphologically and phylogenetically distinct from other families of *Diaporthales*. Species in this family are mostly pathogenic on *Juglandaceae* tree species causing black pustular dieback disease (Graves 1923, Belisario 1999). Du *et al*. (2017) introduced a new family *Melansporellaceae* for *Juglanconis* species and here we synonymise *Melansporellaceae* under *Juglanconidaceae.*

Juglanconis juglandina (Kunze) Voglmayr & Jaklitsch, Persoonia 38: 144. 2017. Facesoffungi number FoF03490.

Illustration: See Voglmayr & Jaklitsch (2017).

Saprobic on dead twigs and branches of *Juglandaceae*. Sexual morph: *Pseudostromata* 0.8–2 mm diam, typically inconspicuous, sometimes distinct, circular, slightly projecting, without perithecial bumps. *Ectostromatic disc* 0.5–1.2 mm diam, indistinct, circular or oblong, dark grey, brown or black, often covered by densely arranged ostioles, pulvinate. *Central column* yellowish to brownish grey. *Entostroma* indistinct. *Ascomata* 440–565 μm diam, perithecial, aggregated, immersed, globose to subglobose, coriaceous, black, arrange in various configurations. *Asci* 140–160 × 17–22 μm, 8-spored, unitunicate, clavate to fusoid, indistinct apical ring, with small narrow stalk. *Ascospores* 25–30 × 8–11 μm, uni- to irregularly biseriate, hyaline, inequilaterally ellipsoid or broadly fusoid, asymmetric, distinctly constricted at the septum, without appendages, upper cell mostly larger, with rounded to subacute end, lower cell subacute to narrowly rounded, multiguttulate, containing mostly one large and numerous small guttules per cell. Asexual morph: *Conidiomata* acervular, 1–4 mm diam, black, scattered or occasionally confluent, with central or eccentric stromatic column, at maturity covered by black discharged conidial masses, usually conspicuous. *Conidiophores* 25–35 μm high, 5–6.5 μm wide, cylindrical to lageniform, simple, rarely branched at the base, smooth, subhyaline to pale brown. *Conidiogenous cells* annellidic with distinct annellations, integrated. *Conidia* 20–25 × 12–15 μm, unicellular, hyaline when immature, brown to blackish when mature, broadly ellipsoid to broadly pip-shaped, truncate with distinct scar at the base, multiguttulate, thick-walled, wall ornamented on the inside of the wall with irregular confluent verrucae and with gelatinous sheath.

Notes: Voglmayr & Jaklitsch (2017) neotypified *Melanconium juglandinum* based on a freshly collected specimen due to misplacement or loss of the type specimen and poor condition of other authentic specimens. The conidiomata, conidiophores and conidia was nicely illustrated by Corda (1839) and the asexual morph is very common and conspicuous, while the sexual morph is infrequently found in fully-developed condition.

Lamproconiaceae C. Norphanphoun, T.C. Wen & K.D. Hyde, Phytotaxa 270: 94. 2016. Facesoffungi number FoF03491. Clade 22.

Pathogenic and saprobic on dead herbaceous branches. Sexual morph: *Stromata* prosenchymatous around perithecia, delimited externally by greenish, blackened, dense pseudoparenchymatous zone, interior whitish, composed of interwoven hyphae mixed with substrate cells, 3–5 ascomata in a stroma. *Ascomata* perithecial, small, aggregated, scattered, globose to subglobose, pale to dark brown, coriaceous, ostiolate, papillate. *Papilla* converging and erumpent through stroma surface as single, large opening. *Peridium* comprises pale brown, compressed, cells of *textura angularis*. *Asci* 8-spored, unitunicate, cylindrical, short-stalked, J- apical apparatus. *Ascospores* uniseriate, broadly ellipsoid, 1-septate, not or slightly constricted at the septa, hyaline, smooth. Asexual morph: *Conidiomata* pycnidial, solitary, partly immersed in host tissue, uni- to multilocular or convoluted, dark blue or dark blackish brown, erumpent in the centre. *Pycnidium* thick-walled, thin at inner layer, hyaline or dark brown, comprising wall cells of *textura angularis* or *textura intricata*. *Ostiole* absent, dehiscence irregular. *Paraphyses* interspersed within conidiophores. *Conidiophores* filiform or cylindrical, pale-bluish or hyaline, septate, branched, smooth-walled, formed at the base of conidiomatal wall. *Conidiogenous cells* holoblastic, cylindrical to subcylindrical, each forming a single conidium at the apex, or annellidic, colourless to olivaceous, smooth-walled. *Conidia* fusiform, ellipsoid, thick-walled, contents granular, aseptate, bluish to glistening dark blue or hyaline, smooth-walled, produced in mucilage but without a distinct mucilaginous envelope or appendage.

Type: *Lamproconium* (Grove) Grove.

Type species: *Lamproconium desmazieri* (Berk. & Broome) Grove.

Lamproconium desmazieri (Berk. & Broome) Grove [as '*desmazieri*'], British Stem- and Leaf-Fungi (Coelomycetes) (Cambridge) 2: 321. 1937. Facesoffungi number FoF03492. Fig. 28.

Pathogenic and saprobic on dead twigs and branches of lime trees (*Tilia* sp.). Sexual morph: Undetermined. Asexual morph: *Conidiomata* 0.8–1 × 0.4–0.55 mm, pycnidial, solitary, partly immersed in host tissue, uniloculate, dark blue, with a raised centre. *Pycnidium* 50–70 µm, with multi-layered wall, thin at inner layer, hyaline, wall cells of *textura angularis*. *Paraphyses* interspersed with conidiophores. *Conidiophores* 30–120 µm high, arising from the outermost wall layer at the basal of pycnidium, filiform or cylindrical, pale-bluish to hyaline, septate, branched, smooth-walled. *Conidiogenous cells* cylindrical to sub-cylindrical, annellidic, with flared periclinal thickenings in the collarette zone, colourless to olivaceous, smooth-walled. *Conidia* 22–28 × 8–10 µm ($\bar{x}$ = 25.25 × 9 µm, n = 30), fusiform, ellipsoid, infrequently slightly curved, aseptate, initially hyaline, bluish to glistening dark blue at maturity, narrowly rounded at ends, smooth-walled.

Material examined: **Russia**, Rostov region, Krasnosulinsky district, Donskoye forestry, artificial forest, on dead branches of *Tilia cordata* (*Tiliaceae*), 21 May 2014, T. Bulgakov, MFLU 14–0780.

Notes: *Melanconium desmazieri* was reported as the asexual morph of *Melanconis desmazieri* from *Tilia* species (Petrak 1938). Grove (1937) re-circumscribed the species of *Melanconium* and postulated that *Melanconium desmazieri* differed from the type species of *Melanconium* in having 1-septate, bluish to glistening dark blue conidia. Therefore, Grove introduced a new genus *Lamproconium* to accommodate this taxon (Grove 1937, Sutton 1980), and *Lamproconium desmazieri* was placed in *Diaporthales* genera *incertae sedis* by Cannon & Minter (2014). Based on phylogenetic study, Norphanphoun *et al*. (2016) synonymised *Melaconis desmazieri* under *Lamproconium desmazieri* and introduced a new family *Lamproconiaceae* to accommodate *Lamproconium* and *Hercospora*. Morphologically *Lamproconiaceae* is distinct from other families of *Diaporthales* in having dark blue or dark blackish brown pycnidial conidiomata and fusiform to ellipsoid, aseptate, bluish to glistening dark blue or hyaline conidia. The sexual morph is reported only for *Hercospora*. Combined gene analysis of LSU nrDNA, ITS nrDNA, *rpb2*, and *tef1* shows that *Lamproconiaceae* is a distinct family that is sister to *Sydowiellaceae* (Fig. 1, Clade 22).

Macrohilaceae Crous, IMA Fungus 6: 180. 2015. Clade 15.

Pathogenic forming leaf spots. Sexual morph: Undetermined. Asexual morph: Coelomycetous. *Conidiomata* pycnidial, immersed, becoming erumpent, medium brown, globose. *Conidiophore* reduced to conidiogenous cells. *Conidiogenous cells* lining the inner cavity, pale brown, cylindrical, proliferating percurrently near the apex. *Conidia* solitary, medium to dark brown, ovoid, smooth, guttulate, medialy septate, apex obtuse, base truncate with a visible scar.

Type genus: *Macrohilum* H.J. Swart.

Type species: *Macrohilum eucalypti* H.J. Swart.

Notes: The family *Macrohilaceae* was introduced and typified by *Macrohilum* (Crous *et al*. 2015) and its taxonomic placement in *Diaporthales* has been reported based on LSU nrDNA sequence data. In this study, our concatenated analysis on LSU nrDNA, ITS nrDNA, *rpb2* and *tef1* also indicates that the *Macrohilum eucalypti* strains cluster together with high support and belong to the *Macrohilaceae* (Fig. 1, Clade 15). *Macrohilaceae* differs from other families of *Diaporthales* in having single, dark brown, guttulate, thick-walled, medianly septate, oval conidia with obtuse apex and truncate base (Crous *et al*. 2015). This monotypic family comprises only a single species commonly associated with leaf spots of *Eucalyptus*.

Macrohilum eucalypti H.J. Swart, Trans. Br. mycol. Soc. 90: 288. 1988. Facesoffungi number FoF03493.

Illustration: See Crous *et al*. (2015).

Pathogenic forming leaf spots. Sexual morph: Undetermined. Asexual morph: *Conidiomata* immersed, becoming erumpent, medium brown, globose, to 300 µm diam. *Conidiogenous cells* lining the inner cavity, pale brown, cylindrical, finely roughened, proliferating percurrently near the apex, 10–15 × 3–5 µm. *Conidia* solitary, medium to dark brown, ovoid, smooth, guttulate, developing a single, dark brown, supra-median septum, thick-walled, frequently constricted at the septum, apex obtuse, base truncate and protruding, with a visible scar, 2–3 µm wide, 15–20 × 10–12 µm (description based on Crous *et al*. 2015).

Notes: Crous *et al*. (2015) epitypified *Macrohilum eucalypti* using an Australian specimen collected from *Eucalyptus piperita*. Although a New Zealand isolate (CPC 10945) differed from the Australian ex-epitype isolate (CPC 19421) by four base pairs in the ITS nrDNA, Crous *et al*. (2015) did not propose this isolate as a new species pending collection of more material.

Melanconidaceae G. Winter [as '*Melanconideae*'], Rabenh. Krypt.-Fl., Edn 2 (Leipzig) 1.2: 764. 1886. Clade 2.

Saprobic or pathogenic on plants. Sexual morph: *Pseudostromata* well-developed, obvious, erumpent. *Ectostromatic disc* surrounded by bark or not, yellowish white, ostiolar canal opening around the disc. *Ascomata* perithecial, arranged as circles around the ectostromatic disc, oblique or horizontal, globose to subglobose, coriaceous, black, with long, periphysate, lateral ostiolar canals. *Peridium* comprising outer, thick-walled, brown cells of *textura globosa* to *textura angularis* and inner, thick-walled, flat, hyaline cells of *textura angularis*. *Hamathecium* comprising wide, hyphae-like, paraphyses, deliquescent at maturity. *Asci* 8-spored, unitunicate, oblong to fusiform, short pedicellate, with distinct, J- apical ring. *Ascospores* overlapping uni- to biseriate, hyaline, ellipsoid, 1-septate. Asexual morph: coelomycetous, melanconium-like. *Conidiomata* acervular, scattered, solitary, superficial, black, coriaceous. *Conidiophores* branched at the base, septate, *Conidiogenous cells* annellidic, cylindrical. *Conidia* hyaline to brown, ellipsoid or subglobose, smooth-walled, thick-walled.

Type genus: *Melanconis* Tul. & C. Tul.

Type species: *Melanconis stilbostoma* (Fr.) Tul. & C. Tul.

Notes: The family *Melanconidaceae* was introduced by Winter (1886) to accommodate species having yellowish-white ectostromatic discs surrounding ascomata arranged in a circle. Members of this family are plant pathogens causing disease on economic plant species, as well as saprobes. Maharachchikumbura *et al*. (2016) listed 24 genera under this family based on morphology, following Lumbsch & Huhndorf (2010). However, most genera do not have any DNA sequence data, except *Dicarpella*, *Melanconiella*, *Melanconis*, *Melanconium*, and *Prosthecium*. Voglmayr & Jaklitsch (2014) synonymised *Prosthecium* under *Stilbospora* and included it in *Stilbosporaceae*. Crous *et al*. (2012b) have linked more than half of known wuestneia-like species to *Harknessia* species accommodating it in *Harknessiaceae*. Based on morphological and phylogenetic evidence, Castlebury *et al*. (2002) and Rossman *et al*. (2007) reported that this family is monogeneric with *Melanconis* and its asexual morph *Melanconium*. However, Rossman *et al*. (2015) synonymised *Melanconium* under *Melanconis* based on the poor phylogenetic resolution of *Melanconium* species and poor host-specificity. Phylogenies generated in this study position *Dicarpella* and *Melanconiella* (both in *Melanconiellaceae*; Fig. 1, Clade 10) outside the *Melanconidaceae* (Fig. 1, Clade 2). Considering the lack of molecular data, diverse ecological strategies and variable morphology, the family *Melanconidaceae* is restricted to *Melanconis sensu stricto*. Hence, we exclude all genera listed in Maharachchikumbura *et al*. (2016) from this family except *Melanconis*.

Melanconis apiocarpum and *M. marginale* have been reported from leaf spots of *Alnus* species in Canada, England, and Switzerland (Sieber *et al*. 1991). *Melanconium juglandinum* causes black pustular dieback of *Juglans* species in Europe and was consistently isolated from diseased twigs and branches of Persian walnut trees (*Juglans regia*), proving to be a virulent pathogen (Belisario 1999).

Melanconis italica Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821560. Facesoffungi number FoF03494. Figs 29, 30.

Etymology: Species epithet based on the country where the fungus was collected, Italy.

Saprobic on *Alnus cordata*. Sexual morph: *Pseudostromata* poorly-developed, erumpent. *Ectostromatic disc* 500–600 µm diam, surrounded by bark or not, yellowish-white, causing a coarse bark surface, inverted conical, ostioles open into margin and rarely middle of the disc. *Ascomata* 0.90–1 mm high, 0.4–0.5 mm diam (x̄ = 0.98 × 0.47 mm, n = 20), perithecial, oblique, globose to subglobose, coriaceous, black, with long periphysate, lateral ostiolar canal. *Hamathecium* comprising wide, hyphae-like, hyaline, septate 4–12 µm wide (x̄ = 9 µm, n = 20) paraphyses. *Peridium* 15–28 µm diam (x̄ = 21 µm, n = 10), comprising thick-walled, brown cells of *textura angularis*. *Asci* 80–92 × 11–14 µm (x̄ = 13 × 8.5 µm, n = 20), 8-spored, unitunicate, cylindrical, short pedicellate, with distinct, J- apical ring. *Ascospores* 18–21 × 2.8–4 µm (x̄ = 19 × 3.5 µm), biseriate, hyaline, fusiform, 1-septate, slightly constricted at the septum, smooth-walled. Asexual morph: *Conidiomata* on MEA solitary, superficial, globose, appears as slimy bubbles of conidia mass, black. *Conidiophores* cylindrical, branched, thick-walled, hyaline. *Conidiogenous cells* blastic, terminal or intercalary, bottle-shaped, narrowing towards the apex, hyaline, thick-walled. *Conidia* fusiform to ellipsoidal, aseptate, thick-walled, basal end pointed, apical end blunt, olivaceous.

Culture characteristics: Colonies growing on MEA attained 1 cm within 7 d incubation at 18 °C, flat, circular, smooth margin, white, tightly attached to the substrate, little aerial mycelia.

Specimen examined: **Italy**, Province of Forlì-Cesena, Fiumicello di Premilcuore, on dead branch of *Alnus cordata* (*Betulaceae*), 4 Dec. 2013, E. Camporesi, IT 1557 (**holotype** MFLU 17–0879, **isotype** BBH 42441, cultures ex-type, MFLUCC 16–1199, MFLUCC 17–1659).

Notes: *Melanconis italica* clusters in a clade with *M. alni* with high support (Fig. 1, Clade 2). Both *M. italica* and *M. alni* are associated with *Alnus* species. *Melanconis alnicola* is also reported from *Alnus* species. However, there are no DNA sequence data in GenBank for *Melanconis alnicola*. Morphologically, *M. alni* differs from *M. italica* in having short to long, hyaline, filiform appendages at both ends, and oval to ellipsoid ascospores. In contrast, *M. alnicola* has large, oval to ellipsoid ascospores (25–45 × 9–12 µm) and small asci (50–60 × 10–15 µm). Hence, a new species, *Melanconis italica,* is introduced to accommodate this taxon.

Melanconiellaceae Senan. & Maharachch., K.D. Hyde, **fam. nov.** MycoBank MB821561. Facesoffungi number FoF03495. Clade 10.
Synonym: *Melanconiellaceae* Locq., Mycol. gén. struct. (Paris): 210. 1984. (nom. inval., Art 39.1, Melbourne Code).

Phytopathogenic or saprobic. Sexual morph: *Stromata* present or absent. If present; *Pseudostromata* inconspicuous, erumpent, pale or dark coloured ectostromatic disc or pulvillus causing a more or less pustulate bark surface. *Ectostromatic disc* convex, flat to concave, surrounded by bark or not. *Central column* beneath the disc more or less conical, comprising hyaline or pigmented hyphae mixed with a pigmented, cream, yellow, olive, brownish or grey, powdery amorphous substance. *Perithecia* sometimes epiphyllous without stromatic tissues and immersed in host substrate, inconspicuous or appearing as rounded bumps beneath the bark surrounding the ectostromatic disc, oblique or horizontal, scattered or often arranged in a circle around the central column, with long lateral ostioles that converge at the margin of the central column. *Ostioles* emerging in various positions in the ectostromatic disc, cylindrical. *Peridium* comprising dark, thick-walled cells of *textura angularis*. *Hamathecium* aparaphysate or comprising broad, hyaline paraphyses. *Asci* 2–8-spored, unitunicate, cylindrical-clavate, oblong or fusoid, with a J- distinct apical ring, tapering below to a short, narrow pedicel. *Ascospores* hyaline, yellowish or brown, oblong, fusoid or ellipsoid, 0–1-septate, septa central or slightly eccentric, slightly constricted or not, smooth, with or without short, blunt appendages and sometimes with a narrow gelatinous sheath. Asexual morph: *Conidiomata* acervular or pycnidia, punctiform, subcuticular, immersed or erumpent, sometimes with a central, well-developed, pale brown, pseudoparenchymatous layer becoming thinner or absent at the margin of the conidiomata, multiloculate, sometimes papillate, sometimes with pale coloured, ectostromatic disc and central column or with radiate scutella. *Scutella* convex, membranous, brown, somewhat translucent, with a central hyaline or pale disc, giving rise to radiating hyphae, thick-walled cells radiating from a central point, rounded to pointed at the tips. *Conidiophores* reduced to conidiogenous cells or branched, sometimes septate only at the base, few-celled, smooth, hyaline to pale brown, sometimes short, forming under the developing scutellum. *Pseudoparaphyses* filiform. *Conidiogenous cells* annellidic or phialidic. *Conidia* initially hyaline becoming brown, ellipsoid, obovoid, subglobose, ovoid or oblong, thick-walled, smooth to finely verrucose, with or without distinct hyaline sheath, each with a truncate base and obtuse to bluntly pointed apex, sometimes somewhat granular, sometimes with inconspicuous to conspicuous basal hilum, with or without distinct hyaline sheath or frill.

Type genus: *Melanconiella* Sacc.

Type species: *Melanconiella spodiaea* (Tul. & C. Tul.) Sacc.

Notes: The phylogenetic analyses of this study showed that *Greeneria*, *Melanconiella*, and *Dicarpella* (previously placed in *Melanconidaceae*), *Tubakia* (previously placed as *Diaporthales incertae sedis*), *Sphaeronaemella fragariae* (previously placed in *Microascales incertae sedis*) and *Microascospora* gen. nov. forms a distinct clade with moderate support, which we recognise as Melanconiellaceae (Fig. 1, Clade 10).

The genus *Greeneria* was introduced based on *G. fuliginea* (Scribner & Viala 1887) and was synonymised under *Melanconium* (Cavara 1889) as *Melanconium fuligineum*. Later van der Aa (1973) accommodated this genus in *Phyllosticta* as *P. ampelicida*. Punithalingam (1974) renamed this taxon as *Greeneria uvicola* providing a detailed description and illustration. A LSU nrDNA sequence analysis by Farr *et al*. (2001) showed the phylogenetic placement of *Greeneria uvicola* outside of *Melanconidaceae*, but within *Diaporthales.* Analyses in this current study showed the phylogenetic placement of *G. uvicola* and *G. saprophytica* within *Melanconiellaceae* (Fig. 1, Clade 10). However, *G. saprophytica* does not show a very close affinity to *G. uvicola*. *Greeneria uvicola* is one of the most common pathogens causing various diseases in grapes (Navarrete *et al*. 2009). *Greeneria* lacks a known sexual morph (Zhang & Blackwell 2001) and it differs from other diaporthalean asexual morphs in having holoblastic conidiogenesis, producing phialidic conidiogenous cells in acervuli or pycnidia, and pale brown conidia (Barr 1978). The fungus overwinters on stem lesions, mummified berries, leaves, and tendrils. It is known to attack several species of *Vitis* including *V. aestivalis*, *V. labrusca*, *V. rotundifolia*, and *V. vinifera*.

The genus *Dicarpella* is based on *Dicarpella bina* and the asexual morph of this genus was reported as *Tubakia* (Belisario 1991). *Tubakia* is typified by *Tubakia japonica*. The type species of these two genera are not linked to each other. However molecular data linked *Tubakia* and *Diplacella* together and a few *Diplacella* species have *Tubakia* asexual morphs (Sogonov *et al*. 2008). *Tubakia* is more commonly encountered compared with *Dicarpella* and it is also a more widely used name than *Dicarpella*. The phylogenetic analyses in this study indicate a plausible relationship of *Dicarpella dryina* and *Tubakia seoraksanensis* as a holomorphic genus (Fig. 1, Clade 10). However, it is hard to confirm that *Dicarpella* and *Tubakia* are congeneric without analysing sequence data of the type species. Thus, here we retain *Dicarpella* and *Tubakia* as two separate genera until sequence data becomes available.

Voglmayr *et al*. (2012) reviewed the genus *Melanconiella* based on herbarium material and recently collected specimens. The morphological and phylogenetic distinctness of *Melanconiella* from *Melanconis* was discussed. The generic type of *Melanconiella* was confirmed as *M. spodiaea*. Phylogenetic analysis in this study showed the distinct placement of *Melanconiella* within this new clade (Fig. 1, Clade 10).

A new genus *Microascospora* is introduced to this family based on *Microascospora rubi*. Phylogenetically *Sphaeronaemella fragariae* did not cluster with other *Sphaeronaemella* species and it forms a clade with *Microascospora rubi.* Hence *Sphaeronaemella fragariae* is excluded from *Sphaeronaemella* and accommodated in *Microascospora* as *M. fragariae*. However, *Melanconiellaceae* was originally invalidly published (Art. 39.1, Melbourne) by Locquin (1984). Hence *Melanconiellaceae* is herewith validated to accommodate *Dicarpella*, *Greeneria*, *Melanconiella*, *Microascospora* and *Tubakia.*

Melanconiella chrysodiscosporina Voglmayr & Jaklitsch, Fungal Diversity 57: 14. 2012. Facesoffungi number FoF03496. Fig. 31.

Saprobic on dead branch of *Fagus sylvatica*. Sexual morph*: Pseudostromata* indistinct, irregular or circular outline. *Ectostromatic disc* minute, circular, narrowly fusoid to oblong, yellow or greyish brown, central column yellow. *Entostroma* comprising subhyaline to yellowish hyphae. *Ascomata* 1.2–1.3 mm high, 0.3–0.5 mm diam ($\bar{x}$ = 1.25 × 0.45 mm, n = 20), immersed, aggregated, globose to subglobose, coriaceous, black, arranged in valsoid configuration. *Papilla* 600–950 µm high, 90–130 µm diam ($\bar{x}$ = 800 × 117 µm, n = 10), long, asymmetrical or symmetrical, black, converging at upper region and make a common canal to open out, internally covered by hyaline periphyses. *Peridium* 14–17 µm diam ($\bar{x}$ = 15 µm, n = 10), comprising outer few layers of thick-walled, brown, compressed cells of *textura angularis* and inner thick-walled, hyaline, compressed cells of *textura angularis. Asci* 85–100 × 13–17 µm ($\bar{x}$ = 95 × 15 µm, n = 20), 8-spored, unitunicate, cylindrical to fusoid, with J- distinct apical ring, sessile or with short pedicel. *Ascospores* 17–20 × 6–9 µm ($\bar{x}$ = 17.6 × 7.5 µm, n = 20), uni- or biseriate, broadly ellipsoid, not constricted at the septum, ends broadly rounded, hyaline, medianly 1-septate, multi-guttulate with one large and numerous small guttules per cell, wall swelling and sometimes thicken and stuffed at the septum. Asexual morph: discosporina-like. *Conidiomata* 140–180 µm high, 490–600 µm diam (x̄ = 150 × 507 µm, n = 20), visible as darker spots marginated by a distinct dark brown to blackish marginal zone, with a central stromatic column, at maturity covered by whitish discharged conidial masses. *Conidiophores* 6–10 × 5–7.5 µm (x̄ = 7.4 × 6 µm, n = 20), few layers, cubic, thick-walled, hyaline. *Conidiogenous cells* 9–12 × 1–2 µm (x̄ = 11 × 1.8 µm, n = 20), phialidic, conical, base enlarged, narrowing towards the apex, thick-walled, hyaline. *Conidia* 10–12 × 4–6 µm (x̄ = 10.8 × 5.2 µm, n = 20), ellipsoid, oblong or cylindrical, with two large and numerous small guttules, hyaline, with gelatinous sheath.

Specimen examined: **Italy**, Province of Forlì-Cesena, Bagno di Romagna, near Riofreddo, on dead branches of *Fagus sylvatica* (*Fagaceae*), 14 Aug. 2016, E. Camporesi, IT 3066, MFLU 17–0893, living culture MFLUCC 17–1671.

Notes: *Melanconiella chrysodiscosporina* was introduced by Voglmayr & Jaklitsch (2012). This fungus was mostly found in the summer season from late spring to autumn (Voglmayr & Jaklitsch 2012). The holotype and other authentic specimens were collected from dead branches of *Carpinus betulus* (*Betulaceae*). However, we collected this specimen from dead branches of *Fagus sylvatica* (*Fagaceae*). This is the first host record of *Melanconiella chrysodiscosporina* on *Fagus sylvatica.*

Melanconiella chrysomelanconium Voglmayr & Jaklitsch, Fungal Diversity 57: 16. 2012. Facesoffungi number FoF03497. Fig. 32.

Saprobic on branches of *Carpinus betulus*. Sexual morph: Not observed. Asexual morph: melanconium-like. *Conidiomata* 0.4–1 mm diam, visible as blackish spots with central or eccentric ostiolar opening, pycnidial, epidermal to subepidermal, globose to subglobose, black, coriaceous, at maturity covered by black discharged conidial masses. *Ostiole* present, pointed. *Conidiomatal wall* composed of thin-walled, brown cells of *textura angularis*. *Conidiophores* reduced to conidiogenous cells, arising from the uppermost layer of cells of the basal stromatic pycnidial wall. *Conidiogenous cells* 7–18 µm high, 2–6 µm diam (x̄ = 14.4 × 4 µm, n = 20), annellidic, hyaline, cylindrical, thick-walled, determinate, integrated, with flared collarette and periclinal wall-thickening. *Conidia* 13–20 × 7–11 µm (x̄ = 15 × 8.5 µm, n = 20), dark brown, broadly ellipsoid to globose, circular in outline, slightly truncate at base, aseptate, multiguttulate with 1–2 large and numerous small guttules, thick-walled, with distinct gelatinous sheath, smooth.

Specimen examined: **Italy**, Province of Forlì-Cesena, Via Nenni, Forlì, on dead aerial branches of *Carpinus betulus* (*Betulaceae*), 2 Jan. 2015, E. Camporesi, IT 1622, MFLU 17-0966.

Notes: *Melanconiella chrysomelanconium* is morphologically similar and phylogenetically related to *M. chrysodiscosporina* (Voglmayr *et al*. 2012). The combined gene analysis of this study illustrates its phylogenetic relationship to other *Melanconiella* species (Fig. 1, Clade 10).

Microascospora Senan. & K.D. Hyde, **gen. nov.** MycoBank MB821562. Facesoffungi number FoF03498.

Etymology: Name based on small ascospores (< 20 µm in length).

Saprobic on dead stems. Sexual morph: *Ascomata* scattered, solitary, immersed, globose to subglobose, brown, coriaceous, papillate, ostiolate. *Papilla* narrow, long, straight or curved, comprising thick-walled, brown, compressed cells of *textura angularis,* internally covered by hyaline periphyses. *Peridium* comprising thick-walled, brown, somewhat compressed cells of *textura angularis. Hamathecium* aparaphysate. *Asci* 8-spored, unitunicate, clavate to fusiform, J- apical ring, attached to base without a pedicel. *Ascospores* overlapping biseriate, ellipsoid to fusiform, hyaline, aseptate, with two large fat globules at ends, appendages long, filiform to wavy, hyaline. Asexual morph: Undetermined.

Type species: *Microascospora rubi* Senan., Maharachch. & K.D. Hyde.

Microascospora rubi Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821563. Facesoffungi number FoF03499. Fig. 33.

Etymology: Name based on host genus *Rubus*.

Saprobic on dead stems of *Rubus ulmifolia*. Sexual morph: *Ascomata* 250–290 × 205–255 µm (x̄ = 269 × 230 µm), scattered, solitary, immersed, globose to subglobose, brown, coriaceous, papillate, ostiolate. *Papilla* 115–155 µm high, 55–67 µm diam (x̄ = 139 × 65 µm, n = 10), narrow, long, straight or curved, comprising thick-walled, brown, compressed cells of *textura angularis*, internally covered by hyaline periphyses. *Peridium* 10–25 µm (x̄ = 18 µm), comprising thick-walled, brown, large, somewhat compressed cells of *textura angularis*. *Hamathecium* aparaphysate. *Asci* 68–70 × 15–18 µm (x̄ = 69 × 16 µm, n = 20), 8-spored, unitunicate, clavate to fusiform, J- apical ring, attached to base without a pedicel. *Ascospores* 14–19 × 5–7 µm (x̄ = 17 × 6 µm, n = 20), overlapping biseriate, ellipsoid to fusiform, hyaline, aseptate, with two large fat globules at ends, appendages long, filiform to wavy, hyaline. Asexual morph: Undetermined.

Culture characteristics: Colonies growing on MEA slow growing, becoming 1 cm within 10 d at 18 °C, circular, umbonate, irregular margin, cream to olivaceous, cotton-like, loosely attached to the substrate.

Specimen(s) examined: **Italy**, Province of Forlì-Cesena, Bagno di Romagna, Ridracoli, on dead branch of *Rubus ulmifolia* (*Rosaceae*), 24 Jan. 2014, E. Camporesi, IT 1675 (**holotype** MFLU 15–1112, **isotype** BBH 42445).

Notes: A new genus *Microascospora* is introduced based on *M. rubi*. This genus is morphologically and phylogenetically distinct from other genera in *Melanconiellaceae* having small ascospores (< 20 µm length) with wavy, filiform long appendages, and immersed, solitary ascomata with wavy papilla.

Microascospora fragariae (F. Stevens & Peterson) Senan., Maharachch. & K.D. Hyde, **comb. nov.** MycoBank MB821631. Facesoffungi number FoF03500.
Basionym: *Sphaeronaemella fragariae* F. Stevens & Peterson, Phytopathology 6: 258. 1916.

Notes: The multi-gene sequence analysis in this study shows that *Sphaeronaemella fragariae* (Fig. 1, Clade 10) does not have any affinities to the type species of *Sphaeronaemella*, *S. helvellae* (*incertae sedis* in *Microascales*). *Sphaeronaemella fragariae* forms a well-supported clade that is sister to *Microascospora rubi* in *Melanconiellaceae*. Hence, we exclude *Sphaeronaemella fragariae* from *Sphaeronaemella* and accommodate this taxon in *Microascospora* and propose a new combination as *Microascospora fragariae*.

Tubakia thailandensis Senan., Tangthir. & K.D. Hyde, **sp. nov.** MycoBank MB821564. Facesoffungi number FoF03501. Fig. 34.

Etymology: Name based on the country from which this species was collected, Thailand.

Saprobic on dead leaves. *Conidiomata* 40–50 µm high, 50–75 µm diam, pycnothyria with radiate scutella, scattered to gregarious, superficial on the substratum. *Scutella* convex, brown to dark brown, thick-walled cells, radiating from a central point. *Conidiophores* short, forming under the developing scutella. *Conidiogenous cells* 5–10 × 2–4 µm, phialidic, with a minute collarette and wide periclinal thickening. *Conidia* 10–12.4 × 7.4–8.7 µm (x̄ = 11.3 × 8.1 µm, n = 20), globose to subglobose, smooth, hyaline, thick-walled.

Specimen examined: **Thailand**, Chiang Rai, Doi Mae Salong, on dead leaf, 2 May 2012, K. Wisitrassameewong, NTCL059 (**holotype** MFLU 13–0260, culture ex-type MFLUCC 12–0303).

Culture characteristics: Mycelium white when young, dark green, pale grey to black from above and reverse when aged, with medium mycelium, flat, rhizoid to irregular form, labate margin, and attaining a diam of 46 mm on PDA in 7 d at 27 °C.

Notes: *Tubakia* comprises seven species (Index Fungorum 2017, MycoBank 2017). Braun *et al*. (2014) presented a taxonomic key to the genus *Tubakia* and according to that key, this species is morphologically quite similar to "*Tubakia* sp." which has a small scutellum (40–80 µm diam.) and hyaline or subhyaline conidia (9–11 × 7–9 µm) collected from *Castanea henryi* in China. Therefore, we introduce this species as *Tubakia thailandensis. Tubakia thailandensis* differs from other *Tubakia* species in having small (length < 15 µm), globose or subglobose, hyaline conidia, without microconidial development. Tubakia shares close phylogenetic affinities to *Greeneria saprophytica* (Fig. 1, Clade 10).

Prosopidicolaceae Senan. & K.D. Hyde, **fam. nov.** MycoBank MB821565. Facesoffungi number FoF03502. Clade 17.

Pathogenic on species of *Fabaceae*. *Conidiomata* pycnidial, rarely acervular, solitary or aggregated in a eustromatic stroma with one to several ostioles or astromatic, grey to black, erumpent to immersed. *Peridium* comprising grey-brown cells of *textura angularis*. *Conidiophores* reduced to conidiogenous cells or lining the whole inner layer of the wall, subcylindrical, branched, septate, straight to irregularly curved, base pale brown, becoming medium green-brown at apex. *Conidiogenous cells* mono- to polyphialidic, tightly aggregated, hyaline, smooth, ampulliform, subcylindrical to lageniform, prominent periclinal thickening, at times with percurrent proliferation. *Conidia* solitary, subhyaline to brown, smooth, guttulate, straight to variously curved, ellipsoid to fusoid-ellipsoid, apex obtuse, base truncate to bluntly round.

Type genus: *Prosopidicola* Crous & C.L. Lennox.

Type species: *Prosopidicola mexicana* Crous & C.L. Lennox.

Notes: *Prosopidicolaceae* is a monotypic family introduced here to accommodate *Prosopidicola* species. *Prosopidicolaceae* (Fig. 1, Clade 17) is phylogenetically not associated with any support to known families of *Diaporthales*, but is morphologically well-delinated. Species in this family are pathogens on *Fabaceae* host plants. This family comprises *Prosopidicola albizziae* and *P. mexicana* (Lennox *et al.* 2004, Crous *et al*. 2016).

Prosopidicola mexicana Crous & C.L. Lennox, Stud. Mycol. 50: 191. 2004. Facesoffungi number FoF03503.

Illustration: See Lennox *et al.* (2004).

Pathogenic causing pod rot disease on *Prosopidis glandulosae*. Lesions 2–3 mm wide and up to 7 mm long, covering the pod, irregular, extending across the width of the pod, pale brown with a raised, dark brown margin. *Conidiomata* up to 250 µm diam, amphigenous, pycnidial, rarely acervular, scattered, immersed to erumpent, globose to subglobose, unilocular, black. *Peridium* up to 15 µm thick, consisting of 3–4 layers of brown cells of *textura angularis*. *Conidiophores* 5–50 µm high, 3–4 µm diam, lining the whole inner layer of the wall, subcylindrical, branched, 0–3-septate, straight to irregularly curved, base pale brown, becoming medium greenbrown at apex. *Conidiogenous cells* 5–16 × 3–4 µm, phialidic when young, with prominent periclinal thickening and proliferating percurrently with age, subcylindrical to lageniform, green-brown, smooth when young, becoming medium to dark green-brown and warty with maturity, apex obtaining flared collarettes, rarely with two loci per conidiogenous cell. *Conidia* 10–15 × 4.5–5.5 µm, solitary, broadly ellipsoidal, medium brown, straight to slightly curved, rounded at the apex, tapering to a subtruncate base, with an inconspicuous dehiscence scar, smooth, thin-walled, aseptate (description based on Lennox *et al.* 2004).

Notes: *Prosopidicola mexicana* is the cause of a severe pod rot disease on *Prosopidis glandulosa.* It appears as black lesions surrounded by a dark brown margin. Lennox *et al.* (2004) revealed it to group closely to *Cryphonectriaceae.* However in the phylogenetic analyses generated in this study, it forms a distinct clade which is basal to *Cytosporaceae.*

Pseudoplagiostomataceae Cheew. *et al*., as "*Pseudoplagiostomaceae*", Fungal Diversity 44: 95. 2010. Clade 12.

Pathogenic on leaves, forming spots. Sexual morph: *Ascomata* solitary, scattered, immersed, slanted to horizontal on host tissue, globose or elliptical, black, coriaceous, papillate, ostiolate. *Papilla* short, internally covered with hyaline, filamentous periphyses. *Peridium* comprising a few layers of thick-walled, brown cells of *textura angularis*. *Hamathecium* lacking paraphyses. *Asci* 8-spored, unitunicate, cylindrical, sessile, with J-, subapical ring. *Ascospores* overlapping uni- to biseriate, hyaline, fusiform to ellipsoid, 1-septate, with terminal, elongate, hyaline appendages. Asexual morph: Coelomycetous. *Conidiomata* acervular or pycnidial, brown. *Peridium* comprising small, brown cells of *textura angularis*. *Conidiophores* absent. *Conidiogenous cells* cylindrical to ampulliform, enteroblastic, percurrently proliferating with periclinal thickening and collarette. *Conidia* holoblastic, hyaline to brown, ellipsoid, unicellular, subglobose to broadly allantoid, with obtuse apex and a flat protruding scar at the base.

Type genus: *Pseudoplagiostoma* Cheew. M.J. Wingf. & Crous.

Type species: *Pseudoplagiostoma eucalypti* Cheew., M.J. Wingf. & Crous.

Notes: *Pseudoplagiostomaceae* was introduced by Cheewangkoon *et al*. (2010). *Pseudoplagiostomaceae* is similar to *Gnomoniaceae* (Fig. 1, Clade 1) based on morphological characters of its sexual morph, such as solitary, immersed, non stromatic ascomata with lateral beaks, asci with a distinct apical ring and 1-septate ascospores (Sogonov *et al*. 2008). However, in our phylogenetic analyses it formed a fully-supported clade (Fig. 1, Clade 12) sister to *Apoharknessiaceae*.

Pseudoplagiostoma eucalypti Cheew., M.J. Wingf. & Crous, Fungal Diversity 44: 98. 2010. Facesoffungi number FoF03504.

Illustration: See Cheewangkoon *et al*. (2010).

Pathogenic on leaves forming leaf spots. Sexual morph: *Ascomata* 130–150 µm high, 100–130 µm diam, perithecia, immersed in host tissue, slanted to horizontal, globose to elliptical, coriaceous, brown to black, papillate, ostiolate. *Papilla* 60–65 µm diam, erumpent, internal wall lined by hyaline periphyses. *Peridium* comprising few layers of thick-walled, brown cells of *textura angularis. Hamathecium* aparaphysate. *Asci* 65–70 × 11–13 µm, 8-spored, unitunicate, subcylindrical to long obovoid, with wedge-shaped, J- subapical ring, apex blunt and without a distinct pedicel. *Ascospores* 17–19 × 5–7 µm, overlapping uni- to biseriate, ellipsoid, tapering towards rounded ends, hyaline, median 1-septate, widest at septum, with terminal, elongate, hyaline appendages. Asexual morph: *Conidiomata* 180–200 µm high, 170–190 µm diam, acervular to pycnidial, subcutical to epidermal. *Peridium* comprising small, brown cells of *textura angularis*. *Conidiophores* absent. *Conidiogenous cells* 8–12 × 2–4 µm, cylindrical to ampulliform, enteroblastic proliferation with periclinal thickening. *Conidia* 17–19 × 7–8 µm, holoblastic, ellipsoid, unicellular, with obtuse apex and a flat protruding scar at the base (description based on Cheewangkoon *et al*. 2010).

Notes: The monotypic family *Pseudoplagiostomataceae* was introduced by Cheewangkoon *et al*. (2010) to accommodate a cryptosporiopsis-like fungus isolated from *Eucalyptus*. The type species, *P. eucalypti* (as *Cryptosporiopsis eucalypti*) and two other new species, *P. oldii* and *P. variabile*, were isolated as foliar pathogens from *Eucalyptus* leaf spots. However, *Cryptosporiopsis eucalypti* was not closely related to the generic type of *Cryptosporiopsis*, *C. nigra* (*Dermateaceae*, *Helotiales*), and hence Cheewangkoon *et al*. (2010) introduced *Pseudoplagiostoma* to accommodate this taxon. *Pseudoplagiostoma corymbiae* (Crous *et al*. 2012c) and *P. dipterocarpi* (Suwannarach *et al.* 2016) were introduced to this genus from *Corymbia* sp. and *Dipterocarpus tuberculatus* respectively. The ascospore morphology, in particular, is distinct and morphologically this family differs from other families in the order in having astromatic, slanted to horizontal, globose ascomata with aparaphysate hamathecium, ascospores with terminal, elongate, hyaline appendages and a cryptosporiopsis-like asexual morph. Cheewangkoon *et al*. (2010) analysed LSU nrDNA sequence data of the order *Diaporthales*, to show the distinct placement of *Pseudoplagiostomaceae* with 100 % bootstrap support.

Schizoparmaceae Rossman, Mycoscience 48: 137. 2007. Clade 8.

Saprobic, parasitic or pathogenic on woody, herbaceous plants. Sexual morph: *Ascomata* perithecial, solitary, scattered, subepidermal, immersed to erumpent, becoming superficial, globose, coriaceous, brown to black, short papillate, ostiole with hyaline periphyses, plate-like ornamentation around ostiole. *Peridium* comprising thick-walled, brown-cells of *textura angularis. Hamathecium* aparaphysate. *Asci* 8-spored, unitunicate, ellipsoid to fusiform, sessile, with a J- apical ring. *Ascospores* biseriate, hyaline to becoming pale brown at maturity, ellipsoidal, aseptate, with or without mucoid caps. Asexual morph: Coelomycetous. *Conidiomata* pycnidial, subepidermal, immersed to erumpent, unilocular, globose, slightly depressed globose to subglobose. *Conidiophores* densely aggregated, slender, subulate, simple or branched, hyaline, smooth, occasionally septate and branched at base, invested in mucus, developing from basal pad. *Conidiogenous cells* discrete, simple, subcylindrical, obclavate or lageniform, smooth, proliferating percurrently or with prominent periclinal thickening. *Conidia* ellipsoid, globose, napiform, fusiform or naviculate with a truncate base and an obtuse to apiculate apex, hyaline or olivaceous brown to brown, unicellular, broadly or narrowly ellipsoidal, apices tapering, with or without a longitudinal germ slit, with or without a mucoid appendage.

Type genus: *Coniella* Höhn.

Type species: *Coniella pulchella* Höhn.

Notes: The monogeneric family *Schizoparmaceae* (Fig. 1, Clade 8) was introduced to accommodate *Coniella* (= *Pilidiella*, *Schizoparme*). Species of the asexual *Pilidiella* have been more widely reported than *Schizoparme* (Farr & Rossman 2017) and thus, *Schizoparme* was synonymised under *Pilidiella* giving priority to the older name (Rossman *et al*. 2015). Although van Niekerk *et al*. (2004) treated *Coniella* and *Pilidiella* as two distinct genera, the generic boundaries of the former were recently expanded to include “hyaline to dark brown conidia”, as Alvarez *et al*. (2016) reported that conidial pigmentation was lost or gained several times during the evolution of species within *Coniella*.

Coniella pseudokoreana Senan., Tangthir. & K.D. Hyde, **sp. nov**. MycoBank MB821542. Facesoffungi number FoF03505. Fig. 35.

Etymology: Somewhat similar to *Coniella koreana*, however phylogenetically distant from this species.

Saprobic on dead leaves. *Conidiomata* pycnidial, solitary to gregarious, globose, brown, unilocular, ostiolate, 85–130 µm high, 78–106 µm diam (x̄ = 108 × 92 µm, n = 10) , immersed, with a central short ostiolar canal on each conidioma. *Conidiomata wall* 2–4-layered, 6–15 µm wide (x̄ = 10 µm), with outer brown to dark brown layers composed of thick-walled cells of *textura angularis*, with inner pale brown layer composed of thin-walled cells of *textura prismatica*, except at the base which has a pulvinate convex giving rise to conidiophores or conidiogenous cells. *Conidiophores* 4–8 μm high, 1.5–4 μm wide, short, branched at the base, hyaline, smooth. *Conidiogenous cells* 5–10 μm high, 1.5–2 μm wide, holoblastic to enteroblastic, phialidic. *Conidia* 18–26 × 3–4 (x̄ = 23 × 3.6 µm) fusiform, navicular, with one side slightly curved and another straight, smooth, hyaline, conidium length/width ratio = 6.5:1.

Culture characteristics: Colonies attaining a diam of 4 cm on PDA after 5 d at 27 ºC; surface white with medium to sparse mycelium, flat, irregular, undulate or wavy margin.

Specimen examined: **Thailand**, Phitsanullok, Tung Salang Luang, on decaying leaf, 18 Jun. 2012, N. Tangthirasunun, NTCL093 (**holotype** MFLU 13–0282, culture ex-type MFLUCC 12–0427).

Notes: *Coniella pseudokoreana* displays somewhat similar morphological characters to *C. koreana* and *C. castaneicola* in having linear, falcate, pale brown conidia (Alvarez *et al*. 2016). The colony morphology of *Coniella koreana* described in Alvarez *et al*. (2016) on PDA is similar to the colony morphology of our strain. However, conidiomatal morphology and size of the conidia are different. We collected *Coniella pseudokoreana* on a decaying leaf in Thailand. Our phylogeny reveals, *C. pseudokoreana* is distant from *Coniella koreana* and shares a sister taxon relationship to *C. straminea* (Fig. 1, Clade 8).

Stilbosporaceae Link [as '*Stilbosporei*'], Abh. Königl. Akad.Wiss. Berlin 1824: 180. 1826, emend. Clade 19.

Saprobic on bark of trees and shrubs. Sexual morph: *Pseudostromata* inconspicuous, immersed. *Ectostromatic disc* absent or present, if present inconspicuous, pale brown, rarely dark brown. *Entostroma* prosenchymatous, pale coloured, slightly differentiated from the surrounding bark tissue. *Ascomata* loosely arranged as valsoid groups in a single layer, immersed, aggregated, globose to subglobose, coriaceous, black, ostiolate, papillate. *Ostiole* not obvious, convergent in groups. *Hamathecium* comprising filiform, aseptate, hyaline paraphyses. *Asci* 8-spored, unitunicate, cylindrical, initially attached to the base, later floating in centrum, with J- refractive, apical ring. *Ascospores* overlapping uni- to biseriate, brown, ellipsoid to oblong, distoseptate. Asexual morph: Coelomycetous. *Conidiomata* stromatic, acervular with circular outline, epidermal, immersed to semi-immersed, brown, basal stroma of *textura angularis* to *textura globulosa*, with simple, septate, hyaline paraphyses and hyaline, unbranched cylindrical conidiophores. *Conidiophores* arising from the uppermost cells of basal and parietal tissue, unbranched, cylindrical, septate at only the base, hyaline, smooth, invested in mucus. *Conidiogenous cells* annellidic, discrete or integrated, cylindrical to lageniform, hyaline, smooth-walled, proliferating several times percurrently at apex. *Conidia* ellipsoid or oblong, with an obtuse apex and broad truncate base, sometimes 3-euseptate or distoseptate, with a hyaline sheath, hyaline to brown, thick-walled, smooth, sometimes with several, tubular, unbranched, filiform, flexuous, apical appendages.

Type genus: *Stilbospora* Pers.

Type species: *Stilbospora macrosperma* Pers.

Notes: The family *Stilbosporaceae* was introduced by Link (1826) to accommodate *Prosthecium* and its asexual morph. However, it is not a phylogenetically well-supported family and hence, *Stilbosporaceae* has been synonymised under several different families. Voglmayr & Jaklitsch (2014) resurrected the family *Stilbosporaceae* in *Diaporthales* based on a phylogenetic analysis of LSU nrDNA sequence data and accommodated the genera *Stegonsporium* and *Stilbospora* within the family, synonymising *Prosthecium* under *Stilbospora*. This decision is also supported by our multi-gene phylogeny (Fig. 1, Clade 19). The type species of *Stilbospora*, *S. macrosperma* has been linked to its asexual morph *Prosthecium ellipsosporum*, the generic type of *Prosthecium* (Voglmayr & Jaklitsch 2008). This genus comprises opportunistic or moderately phytopathogenic fungal species that cause branch dieback or twig blight of various plants. Maharachchikumbura *et al*. (2015) included *Natarajania* in *Stilbosporaceae* based on LSU nrDNA, SSU nrDNA, *tef1* and *rpb2* sequence data. However, in other analyses (not shown here), phylogenies also indicated a close association to the genera *Crinitospora, Stilbospora* and *Stegonsporium*. This is rather interesting as up to date, this is the only hyphomycetous taxon affiliated to the diaporthean taxa which are known to have coelomyceteous asexual morphs. The reliability of the deposited sequences as well as the identification of that taxon needs further investigation.

Stilbospora macrosperma Pers., Syn. meth. fung. (Göttingen) 1: 96 (1801). Facesoffungi number FoF03506. Fig. 36.

Saprobic on branches of *Acer pseudoplatanus*. Sexual morph: *Pseudostroma* comprising white, greyish to yellowish hyphae. *Ascomata* 300–350 µm high, 350–465 µm diam (x̄ = 325 × 420 µm, n = 20), immersed, aggregated, globose to subglobose, coriaceous, ostiolate, papillate. *Papilla* cylindrical, pale brown, emerging from perithecial apices and merging separately with the stromatal disc, inconspicuous, often invisible on the bark surface. *Peridium* 20–40 µm diam (x̄ = 32 µm, n = 20), comprising thick-walled, brown, large, cells of *textura angularis* and hyaline, thick-walled, compressed cells of *textura angularis* around the base of papilla. *Hamathecium* comprising multiguttulate, hyaline, septate paraphyses. *Asci* 165–200 × 35–50 µm (x̄ = 182 × 42 µm, n = 20), 8-spored, unitunicate, clavate to ellipsoidal, thick-walled, very short pedicellate, apex containing a J- refractive canal usually wider towards its base. *Ascospores* 40–50 × 20–26 µm (x̄ = 46 × 22 µm, n = 20), biseriate, ellipsoidal, oblong or rarely pyriform, with (3–)5-distosepta and sometimes 1, longitudinal, distoseptum, appendages on both ends projecting, subglobose, outer margin becoming diffuse. Asexual morph: *Conidiomata* 340–450 µm high, 450–460 µm diam (x̄ = 410 × 453 µm, n = 20), immersed, acervular, solitary, with circular outline, dark brown to black. *Paraphyses* 2.5–4 µm diam (x̄ = 3.2 µm, n = 10), unbranched, aseptate, hyaline. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 25–35 × 7–10 µm (x̄ = 31 × 9 µm, n = 20), holoblastic, cylindrical, septate, hyaline. *Conidia* 40–45 × 20–25 µm (x̄ = 43 × 23 µm, n = 20), pyriform, oval, ellipsoid or oblong, base truncate and hyaline, brown, with several distosepta, 1(–2)-longitudinal distosepta, with hyaline sheath.

Material examined: **Austria**, Wien, Landstraße, 3rd District, Botanical Garden of the University of Vienna (HBV), grid square 7864/1, on dead corticated branches of *Acer pseudoplatanus* (*Sapindaceae*), holomorph, 4 Feb. 2006, H. Voglmayr, D39 (**epitype** WU 28068).

Notes: Voglmayr & Jaklitsch (2014) epitypified the type species of *Stilbospora*, *Stilbospora macrosperma* and *S. macrosperma* was confirmed as the asexual morph of *Prosthecium ellipsosporum*, the generic type of *Prosthecium* (Voglmayr & Jaklitsch 2008). *Stilbospora* (1801) is older than *Prosthecium* (1852) and therefore *Stilbospora* has priority (Voglmayr & Jaklitsch 2014).

Sydowiellaceae Lar.N. Vassiljeva, Pirenomits. Lokuloaskomits. Severa Dal'nego Vostoka (Leningrad): 210. 1987. Clade 21.

Saprobic or parasitic on plant matter. Sexual morph: *Stromata* well- or poorly developed, prosenchymatous, scattered, immersed to erumpent, appearing as an aggregation of ostioles, rounded or elliptic in shape, dark brown to black, composed of compact pseudoparenchymatous tissues, several ascoma in a stromata, some species turn umber in 5 % KOH. *Ascomata* solitary or aggregated, immersed or erumpent, globose to sub-globose, sometimes circinate, coriaceous, central or asymmetrically located ostiolar canal opens through an individual or converged ostiole, internally covered by filamentous, hyaline periphyses, sometime ostiolar opening wider than canal, black to brown. *Peridium* comprising a few layers of brown, thick-walled cells of *textura angularis*. *Hamathecium* comprising cellular, septate, branched, hyaline paraphyses. *Asci* 8-spored, unitunicate, cylindrical to sub-globose, short pedicellate, apex blunt with J- apical ring. *Ascospores* uni- to multi-seriate, filamentous, ellipsoid or long fusoid-cylindrical, 1–11-septate, hyaline, pale brown to dark brown, sometimes with apical and basal appendages, wall smooth. Asexual morph: *Conidiomata* sometimes stromatic, pycnidia, uniloculate, superficial, aggregated 3–5 in one group, globose, orange to brown. *Conidiomatal wall* comprising thick-walled, orange cells of *textura angularis*. *Conidiophores* elongate, branched, hyaline, few conidiogenous cells arising from one conidiophore, attached to conidiomatal wall. *Conidiogenous cells* cylindrical, hyaline, ampulliform, septate, ends pointed, phialidic. *Conidia* ovoid to ellipsoid, unicellular, hyaline, smooth-walled.

Type genus: *Sydowiella* Petr.

Type species: *Sydowiella fenestrans* (Duby) Petr.

Notes: The family *Sydowiellaceae* (Fig. 1, Clade 21) was established to accommodate the genus *Sydowiella*, which is typified by *S. fenestrans.* Members of this family occur on herbaceous plants, dicotyledonous and hardwood trees as saprobes, parasites and pathogens. Initially, most genera in this family were placed in

Diaporthales incertae sedis (Rossman *et al*. 2006). However, DNA sequence data analyses of different gene regions of taxa in the family *Sydowiellaceae* proved it to be a well-supported, and its relationships to other families have been clarified (Rossman *et al*. 2007, Maharachchikumbura *et al*. 2015, Senanayake *et al*. 2017). *Sydowiellaceae* comprises the genera *Alborbis*, *Breviappendix*, *Cainiella*, *Calosporella*, *Chapeckia*, *Italiomyces*, *Hapalocystis*, *Lambro*, *Paragnomonia*, *Ranulospora*, *Rossmania*, *Sillia*, *Sydowiella*, *Tenuiappendicula* and *Tortilispora* (Senanayake *et al*. 2017). Here we introduce a new *Sydowiella* species as *S. urticicola*. *Sydowiella urticicola* produce solitary ascomata and ascospores containing a large guttule in each cell which clearly demarcates it from other species. Phylogenetically it is also distinct from other *Sydowiella* species.

Sydowiella urticicola Senan., Camporesi & K.D. Hyde, **sp. nov.** MycoBank MB821566. Facesoffungi number FoF03507. Fig. 37.

Etymology: Named after the host genus *Urtica*.

Saprobic on dead branches of deciduous plants. Sexual morph: *Ascomata* 290–325 µm high, 290–395 µm diam ($\bar{x}$ = 309 × 314 µm, n = 20), perithecia, astromatic, scattered, solitary, superficial to erumpent, globose to sub-globose, coriaceous, black, papillate, ostiolate. *Papilla* 115–150 µm, 155–205 µm diam ($\bar{x}$ = 133 × 173 µm, n = 20), short, wide, internally covered by hyaline periphyses. *Peridium* 15–25 µm diam ($\bar{x}$ = 19 µm, n = 20) comprising inner, hyaline, thick-walled, compressed, 1–3 layers of cells of *textura angularis* and outer, dark brown, thick-walled, rigid, 3–7 layers of cells of *textura angularis*. *Hamathecium* comprising wide, cellular, septate paraphyses. *Asci* 125–145 × 10–15 µm ($\bar{x}$ = 136 × 14 µm, n = 20) 8-spored, unitunicate, cylindrical, short pedicellate, distinct, J- apical ring. *Ascospores* 20–25 × 10–15 µm ($\bar{x}$ = 22 × 12 µm, n = 20), overlapping uniseriate, ends blunted, hyaline, 1-septate, slightly constricted at the septum, with a large fat globule in each cell. Asexual morph: Undetermined.

Culture characteristics: Colonies growing on MEA becoming 2 cm within 5 d at 18 °C, fast growing, circular, umbonate, margin irregular, white, tightly attached to the substrate without spreading aerial mycelium.

Specimen examined: **Italy**, Province of Forlì-Cesena, Monte Fumaiolo, dead stem of *Urtica dioica* (*Urticaceae*), 16 May 2013, N. Camporesi, IT 1268 (**holotype** MFLU 17–0877, **isotype** BBH 42439, cultures ex-type MFLUCC 13–0665, MFLUCC 17–1665).

Notes: Here we introduce a new *Sydowiella* species as *S. urticicola*. *Sydowiella urticicola* produces solitary ascomata and ascospores containing a large guttule in each cell. Phylogenetically this is distinct from other *Sydowiella* species (Fig. 1, Clade 21).

Diaporthales genera *incertae sedis*

Phaeoappendicospora Senan., Q.R. Li & K.D. Hyde, **gen. nov.** MycoBank MB821572. Facesoffungi number FoF03508. Clade 18.

Etymology: Name based on three Latin words “*phaeo*”, “*appendicem*” and “*spora*” referring to the brown spores with appendages.

Saprobic on dead stems of *Fagaceae* species. Sexual morph: *Stromata* forming thin weft of pale brown hyphae around upper part of perithecia. *Ascomata* immersed, aggregated, subglobose to globose, coriaceous, black, ostiolate, papillate. *Papilla* black, cylindrical, lateral, periphysate. *Periphyses* hyaline, filamentous. *Peridium* comprising few layers of black, thick-walled, cells of *textura angularis*. *Hamathecium* comprising few, septate, hyaline paraphyses attached to the base, longer than asci. *Asci* 8-spored, unitunicate, ellipsoid, with a short pedicel, inconspicuous, flat, J- refractive ring at the lower end of the thickened apical wall, apex narrow and blunted. *Ascospores* ellipsoidal to ovoid, with broadly rounded ends, pale brown, 1-septate, not constricted at the septa, thick and smooth-walled, guttulate, with short, hyaline, rounded appendages at both ends. Asexual morph: Undetermined.

Type species: *Phaeoappendicospora thailandensis* Q.R. Li, Senan. & K.D. Hyde.

Phaeoappendicospora thailandensis Senan., Q.R. Li & K.D. Hyde, **sp. nov.** MycoBank MB821573. Facesoffungi number FoF03509. Fig. 38.

Etymology: The species epithet is based on the collection locality.

Saprobic on dead stems of *Quercus*. Sexual morph: *Stromata* 2–4 mm diam (x̄ = 3 mm, n = 15), forming thin weft of pale brown hyphae around upper part of perithecia. *Ascomata* 180–230 μm high, 170–220 μm diam (x̄ = 208 × 198 μm, n = 25), immersed, aggregated, subglobose to globose, coriaceous, black, ostiolate, papillate. *Papilla* black, cylindrical, lateral, periphysate. *Periphyses* hyaline, filamentous. *Peridium* 20–35 μm wide (x̄ = 28 μm, n = 20), comprising few layers of black, thick-walled cells of *textura angularis*. *Hamathecium* comprising few, septate, hyaline paraphyses attached to the base, longer than asci. *Asci* 195–265 × 18.5–27 μm (x̄ = 223 × 22.5 μm, n = 30), 8-spored, unitunicate, ellipsoid, with a short pedicel, inconspicuous, flat, J-refractive ring at the lower end of the thickened apical wall, apex narrow and blunted. *Ascospores* 26–34.5 × 11–13 μm (x̄ = 30 × 12.5 μm, n = 30), ellipsoidal to ovoid, with broadly rounded ends, pale brown, 1-septate, not constricted at the septa, thick and smooth-walled, guttulate, with short, hyaline, rounded appendages at both ends. Asexual morph: Undetermined.

Culture characteristics: Colonies on PDA reaching 5 cm in 7 d at 25 °C, fast growing, circular, flat, smooth, whitish cream in upper, pale yellow in reverse.

Specimen examined: **Thailand**, Chiang Rai, near Khun korn water fall, on branch of *Quercus* sp. (*Fagaceae*), 25 Dec. 2012, Q.R. Li, TL19 (**holotype** MFLU 12–2131, culture ex-type MFLUCC 13–0161).

Notes: The newly introduced monotypic genus *Phaeoappendicospora* is typified by *P. thailandensis* and it comprises brown ascospores with guttules and appendages. *Phaeoappendicospora thailandensis* is associated with dead plant parts may be as saprobes. This fungus is morphologically similar to *Hapalocystis berkeleyi* in *Sydowiellaceae*. However, phylogenetically it does not show an affinity to any of the families in *Diaporthales* (Fig. 1, Clade 18). Hence, we accommodate this species in *Diaporthales* genera *incertae sedis.*

Key to families and genera of *Diaporthales*

1. Coelomycetous 2
1. Ascomycetous 7
2. Conidia hyaline to olivaceous or bluish to glistening dark blue 3
2. Conidia brown to dark brown 6
3. Conidial wall thick, mostly specific on *Tiliaceae* host .... ***Lamproconiaceae***
3. Conidial wall thin, mostly on *Myrtaceae*, *Fabaceae* host 4
4. Conidia aseptata 5
4. Conidia 1-septate .... ***Auratiopycnidiellaceae***
5. Conidiophores reduced to conidiogenous cells, conidia with acute apex .... ***Erythrogloeaceae***
    5a. Conidia olivaceous .... *Disculoides*
    5a. Conidia hyaline 3b
    5b. Conidiomata acervular, sides of conidiomatal wall appearing dark brown to black cells of *textura angularis*, conidiogenous cells lageniform to cylindrical, conidia monomorphic .... *Erythrogloeum*
    5b. Conidiomata subglobose, conidiomatal wall uniformly comprises orange-brown cells of *textura angularis* conidiogenous cells ampulliform, conidia dimorphic .... *Chrysocrypta*
5. Conidiophores subcylindrical, branched, 0–3-septate, conidia with obtuse apex .... ***Prosopidicolaceae***
6. Conidia ovoid, obclavate to conical 7
6. Conidia transversely distoseptate, consisting of four arms .... ***Asterosporiaceae***
7. Conidial wall smooth on the outer surface, with inconspicuous to distinct irregular verrucae on the inner surface .... ***Juglanconidaceae***
7. Conidial wall without ornamentation 8
8. Conidia ovoid, 1-septate .... ***Macrohilaceae***
8. Conidia obclavate to conical, aseptata .... ***Apoharknessiaceae***
    8a. Conidia obclavate, with a scar at the base .... *Lasmenia*
    8a. Conidia conical, with small appendage at base and apical apiculus .... *Apoharknessia*
9. Stromata well-developed 10
9. Stromata absent or poorly developed 17
10. Stromatic tissues orange, becoming purple in KOH .... ***Cryphonectriaceae***
    10a. Asexual morph not reported, hamathecium paraphysate, ascospores brown .... *Chromendothia*
    10a. Asexual morph reported, hamathecium aparaphysate, ascospores hyaline 10b
    10b. Coelomycetes 10c
    10b. Ascomycetes 10i
    10c. Conidia sigmoid with obtuse to subobtuse apex and swollen, obtuse base .... *Aurantiosacculus*
    10c. Conidia cylindrical, ellipsoid to fusoid, occasionally allantoid 10d
    10d. Conidiomata pulvinate 10e
    10d. Conidiomata rostrate, pyriform to globose 10g
    10e. Neck present .... *Luteocirrhus*
    10e. Neck absent 10f

10f. Conidiomata superficial, pale to medium brown, conidiophores consisting of basal subglobular to angular cells, that branch irregularly, becoming cylindrical, transversely septate .... *Foliocryphia*

10f. Conidiomata immersed to erumpent, orange, conidiophores aseptate, occasionally with separating septa and branching .... *Immersiporthe*

10g. Conidiophores hyaline, cylindrical, delimited by septa or not, conidia cylindrical .... *Ursicollum*

10g. Conidiophores reduced to conidiogenous cells, conidia fusoid-ellipsoid or allantoid 10h

10h. Conidia with apical appendage .... *Mastigosporella*

10h. Conidia without apical appendage .... *Chrysofolia*

10i. Conidiomata uniformly orange 10j

10i. Conidiomata uniformly brown to black, with or without orange necks 10t

10j. Conidiomata pulvinate to globose 10k

10j. Conidiomata conical, rostrate, pyriform or convex 10q

10k. Ascospores septate 10l

10k. Ascospores aseptate 10p

10l. Ascostromata superficial, conidiomata paraphysate 10m

10l. Ascostromata immersed to erumpent, conidiomata aparaphysate 10n

10m. Perithecia valsoid .... *Diversimorbus*

10m. Perithecia diatrypoid .... *Microthia*

10n. Conidiomata usually more than 350 µm diam, ascospores with median septum .... *Cryphonectria*

10n. Conidiomata usually less than 350 µm diam, ascospores with median to submedian septum 10o

10o. Ascospores oval to ellipsoid, papilla parallel to each other and open individually .... *Cryptometrion*

10o. Ascospores fusiform, sometimes curved, papilla close to each other and converge at the apex .... *Aurantioporthe*

10p. Stromata strongly developed, large, erumpent, mostly superficial, numerous conidial locules, no paraphyses .... *Endothia*

10p. Stromata small to medium, semi-immersed, few conidial locules or one convoluted locule, paraphyses present .... *Holocryphia*

10q. Conidiomata with necks 10r

10q. Conidiomata without necks 10s

10r. Conidiomata with prominent, delimited neck .... *Latruncellus*

10r. Conidiomata with neck continuous with base, rostrate, white sheath of tissue surrounding perithecial necks .... *Rostraureum*

10s. Conidiomata conical, uniformly orange .... *Amphilogia*

10s. Conidiomata convex, with blackened ostiolar openings .... *Aurifilum*

10t. Conidiomata uniformly black when mature 10u

10t. Conidiomata black with orange neck .... *Aurapex*

10u. Conidiomata base tissue of *textura globulosa* when sectioned longitudinally, perithecial necks long and covered with dark tissue, emerging from orange stroma .... *Chrysoporthe*

10u. Conidiomata base tissue prosenchymatous, apices of conidiomata can be orange to scarlet when young, perithecial necks short, orange to umber stroma .... *Celoporthe*

10. Stromatic tissues dark brown to black, not becoming purple in KOH 11

11. Perithecia with very long, narrow, wavy ostiolar neck opening to or around ectostromatic disc 12

11. Perithecia with medium to short, somewhat wide, straight ostiolar neck opening to host surface 14

12. Ectostroma conspicuous .... ***Melanconidaceae***

12. Ectostroma inconspicuous 13
13. Ascospores distoseptata .... ***Stilbosporaceae***
    13a. Conidia hyaline with several tubular, unbranched, filiform apical appendages .... *Crinitospora*
    13a. Conidia brown without any appendages 13b
    13b. Ascospores and conidia with three transverse eusepta, ellipsoid to oblong; asci without a refractive canal in the apex .... *Stilbospora*
    13b. Ascospores and conidia with more than three transverse distosepta, ascospores sometimes and conidia always with additional longitudinal distosepta, ascospores ellipsoid to oblong, conidia mostly pyriform; asci with a cylindrical, slightly refractive canal in the apex .... *Stegonsporium*
13. Ascospores not distoseptata .... ***Melanconiellaceae***
    13a. Coelomycetous 13b
    13a. Ascomycetous 13c
    13b. Conidiomata subcuticular, acervular .... *Greeneria*
    13b. Conidiomata epiphyllous or hypophyllous with radiate scutella .... *Tubakia*
    13c. Astromatic with solitary ascomata 13d
    13c. Stromatic with aggregated ascomata .... *Mellanconiella*
    13d. Ascospores ellipsoid without appendages .... *Dicarpella*
    13d. Ascospores fusiform with appendages .... *Microascospora*
14. Perithecia arranged in valsoid configuration 15
14. Perithecia not arranged in valsoid configuration 16
15. Conidiomata non-loculate and forming both alpha and beta conidia .... ***Diaporthaceae***
    15a. Coelomycetes 15b
    15a. Ascomycetes 15e
    15b. Conidia olivaceous 15c
    15b. Conidia brown 15d
    15c.Conidia aseptate, guttulate, elongate fusiform to sigmoid .... *Pustulomyces*
    15c. Conidia 2(-3)-septate, ovoid with filiform apical cell and obtuse base .... *Chaetoconis*
    15d. Conidia dimorphic, aseptate, ellipsoid to pyriform .... *Phaeocytostroma*
    15d. Conidia monomorphic, uniseptate, subcylindrical to narrowly ellipsoid .... *Stenocarpella*
    15e. Ascospores brown .... *Phaeodiaporthe*
    15e. Ascospores hyaline 15f
    15f. Ascospores aseptata .... *Mazzantia*
    15f. Ascospores septate 15g
    15g. Septa submedian, large cell usually 2-guttulate, small cell usually 1-guttulate .... *Apioporthella*
    15g. Septa median, with or without guttules 15h
    15h. Ascospores with long slender, thread-like appendage at both ends .... *Hyaliappendispora*
    15h. Ascospores without appendages 15i
    15i. Papilla long-cylindrical, conidia globose to subglobose, multiguttulata .... *Ophiodiaporthe*
    15i. Papilla short, conidia absent or if present; ovate to ellipsoidal, biguttulata 15j
    15j. Ascospores ovoid, not constricted at the septa 15k
    15j. Ascospores fusiform to elongate-ellipsoid, constricted at the septa 15l

15k. Asci form long, pointed apex by narrowing towards the apical ring ...... *Chiangraiomyces*
15k. Asci form blunt apex ...... *Leucodiaporthe*
15l. Ascospores overlapping uniseriate, often with 4 guttules, larger guttules at the center and smaller ones at the ends 15m
15l. Ascospores biseriate, without guttules ...... *Allantoporthe*
15m. Ascospores fusiform, ends pointed, papilla short and wide ...... *Paradiaporthe*
15m. Ascospores elongate to elliptical, ends round, papilla long and narrow ...... *Diaporthe*
15. Conidiomata loculate forming numerous interconnecting chambers arranged radially or irregularly with in ectostromatic tissues and without forming beta conidia ...... ***Cytosporaceae***
15a. Coelomycetes ...... *Waydora*
15a. Ascomycetes 15b
15b. Stromata inconspicuous, ascospores allantoids 15c
15b. Stromata conspicuous, well-developed, ascospores fusiform 15d
15c. Ascomata solitary ...... *Paravalsa*
15c. Ascomata aggregated ...... *Xenotypa*
15d. Perithecia in groups with convergent beaks; asci clavate to fusoid ...... *Cytospora*
15d. Perithecia in groups with non-convergent beaks; asci more or less rectangular ...... *Pachytrype*
16. Conidia dark brown, broadly fusiform to cylindrical or clavate, 3-5-cellular, distoseptata ...... ***Coryneaceae***
16. Conidia hyaline, ellipsoid, unicellular ...... ***Sydowiellaceae***
16a. Stromata conspicuous, well-developed 16b
16a. Stromata absent, inconspicuous, poorly developed 16d
16b. Ascomata valsoid, stromatic tissues do not turn any colour with 10 % KOH 16c
16b. Ascomata diatrypoid, stromatic tissues form dull red with 10 % KOH ...... *Sillia*
16c. Ascospores oval to fusoid-oval, 1-septate, hyaline or hyaline to brown ...... *Chapeckia*
16c. Ascospores fusiform to ellipsoid with long filiform basal cell, 2-septate, hyaline ...... *Ranulospora*
16d. Ascomata solitary 16e
16d. Ascomata aggregated 16i
16e. Asci 4-spored ...... *Breviappendix*
16e. Asci 8-spored 16f
16f. Ascospores apiosporous ...... *Lambro*
16f. Ascospores non-apiosporous 16g
16g. Ascospores oval, hyaline to brown, not constricted at the septa ...... *Cainiella*
16g. Ascospores fusoid, hyaline, constricted at the septa 16h
16h. Ascospores non-appendaged, globules at the center of each cell ...... *Sydowiella*
16h. Ascospores appendaged, globules at the septa of the spore ...... *Italiomyces*
16i. Ascospores oval, short fusoid to ellipsoidal 16j
16i. Ascospores long fusoid cylindrical 16n
16j. Ascospores 1-septate 16k
16j. Ascospores multi-septate 16m
16k. Ascospores with long strip-like appendages ...... *Tenuiappendicula*

16k. Ascospores with short, appendages ... 16l
16l. Ascospores ellipsoid to cylindrical, usually 4-guttulate ... *Alborbis*
16l. Ascospores fusiform, usually multi-guttulate ... *Paragnomonia*
16m. Ascospores hyaline to brown, ellipsoidal with broadly rounded ends, 1–3-septate, constricted at the septa ... *Hapalocystis*
16m. Ascospores hyaline, fusoid to oblong, 3–4-eusepta, not constricted at the septa ... *Calosporella*
16n. Ascospores 0–5-septate ... *Tortilispora*
16n. Ascospores 6–11-septate ... *Rossmania*
17. Ascospores unicellular ... 18
17. Ascospores multicellular ... 19
18. Ascomata superficial to erumpent, conidia elongale ellipsoidal to fusiform without appendages ... ***Schizoparmaceae***
18. Ascomata immersed, conidia oval to globose with basal appendage ... ***Harknessiaceae***
19. Perithecia with 2–3 necks opening on both sides of the substrate/leaf blade ... ***Apiosporopsidaceae***
19. Perithecia with one neck opening to upper side of the substrate/leaf blade ... 20
20. Papilla short, conidia with microcyclic conidiation ... ***Pseudoplagiostomataceae***
20. Papilla long, conidia do not have microcyclic conidiation ... ***Gnomoniaceae***
20a. Coelomycetes ... 20b
20a. Ascomycetes ... 20f
20b. Conidia hyaline ... 20c
20b. Conidia brown ... *Uniseta*
20c. Conidiomata pycnidia ... 20e
20c. Conidiomata acervuli ... 20d
20d. Conidia 1-septate ... *Sirococcus*
20d. Conidia aseptate ... *Millerburtonia*
20e. Conidia filiform to fusiform ... *Asteroma*
20e. Conidia ellipsoidal ... *Cylindrosporella*
20f. Pseudostromata/ stromata absent; perithecia immersed in host tissues ... 20g
20f. Pseudostromata/ stromata present; perithecia immersed in stromatic tissues ... 20u
20g. Perithecial necks not parallel to substrate ... 20h
20g. Perithecial necks parallel to substrate and not fused ... *Cryptosporella*
20h. Infected lesions distinct with dark purple to brown pigmentation or blackish area with pale brown sharp margin ... 20i
20h. Infected lesions indistinct ... 20j
20i. Ascospores apiosporous ... *Apioplagiostoma*
20i. Ascospores non-apiosporous ... *Diplacella*
20j. Ascospores slightly isthmoid with a median septum, often readily separate as part spores ... *Pleuroceras*
20j. Ascospores non-isthmoid, do not separate into part spores ... 20k
20k. Appendages generally present ... 20l
20k. Appendages generally absent ... 20o
20l. Perithecia mostly epiphyllous ... 20m
20l. Perithecia mostly hypophyllous ... 20n

20m. Appendages ovoid to subulate .... *Ambarignomonia*
20m. Appendages cuneiform with diffuse ends or ovoid, subulate acicular .... *Gnomonia*
20n. Ascospores fusiform; arranged irregularly fasciculate or, obliquely in one longitudinal row .... *Apiognomonia*
20n. Ascospores oval to filiform; arranged unevenly parallel, irregularly multiseriate or obliquely uniseriate, occasionally evenly parallel .... *Ophiognomonia*
20o. Perithecia occurring on both sides of the host leaf 20q
20o. Perithecia occurring on only upper or lower side of host leaf 20p
20p. Necks present 20r
20p. Necks absent .... *Gloeosporidina*
20q. Bell-shaped to hemispherical chamber at base of neck present .... *Spataporthe*
20q. Bell-shaped to hemispherical chamber at base of neck absent .... *Gnomoniella*
20r. Asci 32-spored .... *Ditopella*
20r. Asci 8-spored 20s
20s. Ascomata immersed in pale brownish, parenchymatous cellular cavity and ascomata easily separate from them .... *Marsupiomyces*
20s. Ascomata not immersed in any, parenchymatous cellular pockets 20t
20t. Stromata black .... *Gnomoniopsis*
20t. Stromata grey, brownish, cream, yellowish white .... *Plagiostoma*
20u. Ectostromatic disc present .... *Ditopellopsis*
20u. Ectostromatic disc absent 20v
20v. Stromatic tissues grey to pale brown; on top of perithecia and cream yellow mycelium at bottom of perithecia .... *Occultocarpon*
20v. Stromatic tissues black; do not form any mycelium at bottom of perithecia 20w
20w. Ascospores septate 20x
20w. Ascospores aseptate 20ac
20x. Cytoplasm of ascospores granular and divide into two parts with wide vacuous space forming diplastic polarity .... *Bagcheea*
20x. Cytoplasm of ascospores does not divide into any parts 20y
20y. Ascospores apiosporous 20z
20y. Ascospores non-apiosporous 20aa
20z. Ascospores form brown large cell and small hyaline cell at maturity .... *Anisomyces*
20z. Ascospores form both cells hyaline at maturity .... *Mamianiella*
20aa. Ascospores 3-septate .... *Phragmoporthe*
20aa. Ascospores 1-euseptate 20ab
20ab. Stromata immersed in host tissues in bark, ascospores fusiform .... *Alnecium*
20ab. Stromata erumpent to superficial on leaves, ascospores oval .... *Phylloporthe*
20ac. Ascospores oval to ellipsoid .... *Amphiporthe*
20ac. Ascospores allantoid .... *Valsalnicola*

List of accepted families and genera in *Diaporthales*

Apiosporopsidaceae Senan. *et al.*
Apiosporopsis (Traverso) Mariani
Apoharknessiaceae Senan. *et al.*
Apoharknessia Crous & S.J. Lee
Lasmenia Speg.
Asterosporiaceae Senan. *et al.*
Asterosporium Kunze
Auratiopycnidiellaceae Senan. *et al.*
Auratiopycnidiella Crous & Summerell
Coryneaceae Corda
= *Pseudovalsaceae* M.E. Barr
Coryneum Nees
Cryphonectriaceae Gryzenh. & M.J. Wingf.
Amphilogia Gryzenh. *et al.*
Aurantiosacculus Dyko & B. Sutton
Aurapex Gryzenh. & M.J. Wingf.
Aurifilum Begoude *et al.*
Celoporthe Nakab. *et al.*
Chromendothia Lar.N. Vassiljeva
Chrysofolia Crous & M.J. Wingf.
Chrysoporthe Gryzenh. & M.J. Wingf.
=*Chrysoporthella* Gryzenh. & M.J. Wingf.
Cryphonectria (Sacc.) Sacc. & D. Sacc.
Cryptometrion Gryzenh. & M.J. Wingf.
Diversimorbus S.F. Chen & J. Roux
Endothia Fr.
Foliocryphia Cheewangkoon & Crous
Holocryphia Gryzenh. & M.J. Wingf.
Immersiporthe S.F. Chen *et al.*
Latruncellus M. Verm. *et al.*
Luteocirrhus C.F. Crane & T.I. Burgess
Mastigosporella Höhn.
Microthia Gryzenh. & M.J. Wingf.
Rostraureum Gryzenh. & M.J. Wingf.
Ursicollum Gryzenh. & M.J. Wingf.
Cytosporaceae Fr.
=*Valsaceae* Tul. & C. Tul.
Cytospora Ehrenb.
Pachytrype Berl. ex M.E. Barr *et al.*
Paravalsa Ananthap
Waydora B. Sutton
Xenotypa Petr.
Diaporthaceae Höhn. ex Wehm.
Allantoporthe Petr.
Apioporthella Petr.
Chaetoconis Clem.
Chiangraiomyces Senan. & K.D. Hyde
Diaporthe Nitschke
Hyaliappendispora Senan. *et al.*
Leucodiaporthe M.E. Barr *et al.*
Mazzantia Mont.
Ophiodiaporthe Y.M. Ju *et al.*
Paradiaporthe Senan. *et al.*
Phaeocytostroma Petr.
Phaeodiaporthe Petr.
Pustulomyces D.Q. Dai *et al.*
Stenocarpella Syd. & P. Syd.
Erythrogloeaceae Senan. *et al.*
Chrysocrypta Crous & Summerell
Disculoides Crous *et al.*
Erythrogloeum Petr.
Gnomoniaceae G. Winter
Alnecium Voglmayr & Jaklitsch
Ambarignomonia Sogonov
Amphiporthe Petr.
Anisomyces Theiss. & Syd.
Apiognomonia Höhn.
Apioplagiostoma M.E. Barr
Asteroma DC
Bagcheea E. Müll. & R. Menon
Clypeoporthe Höhn.
Cryptosporella Sacc.
Cylindrosporella Höhn.
Diplacella Syd.
Ditopella De Not.
Ditopellopsis J. Reid & C. Booth
Gloeosporidina Petr.
Gnomonia Ces. & De Not.
Gnomoniella Sacc.
Gnomoniopsis Berl.
Marsupiomyces Senan. & K.D. Hyde
Millerburtonia Cif.
Occultocarpon L.C. Mejía *et al.*
Ophiognomonia (Sacc.) Sacc.
Phragmoporthe Petr.
Phylloporthe Syd.
Plagiostoma Fuckel
Pleuroceras Riess.
Sirococcus Preuss
Spataporthe Bronson *et al.*
Uniseta Ciccar
Valsalnicola D.M. Walker & Rossman
Harknessiaceae Crous
Dwiroopa Subram. & Muthumary
Harknessia Cooke
Juglanconidaceae Voglmayr & Jaklitsch
Juglanconis Voglmayr & Jaklitsch
Lamproconiaceae C. Norphanphoun *et al.*
Hercospora Fr.
Lamproconium (Grove) Grove
Macrohilaceae Crous
Macrohilum H.J. Swart
Melanconidaceae G. Winter
Melanconis Tul. & C. Tul.
Melanconiellaceae Senan. *et al.*
Dicarpella Syd.
Greeneria Scribn. & Viala
Melanconiella Sacc.
Microascospora Senan. & K.D. Hyde
Tubakia B. Sutton
Prosopidicolaceae Senan. & K.D. Hyde
Prosopidicola Crous & C.L. Lennox
Pseudoplagiostomataceae Cheew. *et al.*
Pseudoplagiostoma Cheew. *et al.*
Schizoparmaceae Rossman DF *et al.*
Coniella Höhn.
Stilbosporaceae Link
Crinitospora B. Sutton & Alcorn

Stegonsporium Corda
Stilbospora Pers.
Sydowiellaceae Lar.N. Vassiljeva
Alborbis Senan. & K.D. Hyde
Breviappendix Senan. & K.D. Hyde
Cainiella E. Müll
Calosporella J. Schröt
Chapeckia M.E. Barr
Italiomyces Senan. *et al.*
Hapalocystis Auersw. ex Fuckel
Lambro Racib.
Paragnomonia Senan. & K.D. Hyde
Ranulospora Senan. *et al.*
Rossmania Lar.N. Vassiljeva
Sillia P. Karst.
Sydowiella Petr.
Tenuiappendicula Senan. *et al.*
Tortilispora (Sacc.) Senan. & K.D. Hyde

Diaporthales* genera *incertae sedis
Anisomycopsis I. Hino & Katum.
Caudospora Starbäck
Chadefaudiomyces Kamat *et al*.
Cryptascoma Ananthap.
Cryptoleptosphaeria Petr.
Cytomelanconis Naumov
Dictyoporthe Petr.
Ditopellina J. Reid & C. Booth
Durispora K.D. Hyde
Fremineavia Nieuwl.
Hypodermina Höhn.
Hypophloeda K.D. Hyde & E.B.G. Jones
Kapooria J. Reid & C. Booth
Keinstirschia J. Reid & C. Booth
Lollipopaia Inderbitzin
Macrodiaporthe Petr.
Maculatipalma J. Fröhlich & K.D. Hyde
Massariovalsa Sacc.
Mebarria J. Reid & C. Booth
Melanamphora Lafl.
Melanconiopsis Ellis & Everh.
Natarajania Pratibha & Bhat
Phaeoappendicospora Senan. *et al.*
Phragmodiaporthe Wehm.
Plagiophiale Petr.
Plagiostigme Syd.
Prostratus Sivan. *et al.*
Pseudocryptosporella J. Reid & C. Booth
Pseudothis Theiss. & Syd.
Pseudovalsella Höhn.
Rabenhorstia Fr.
Savulescua Petr.
Skottsbergiella Petr.
Stioclettia Dennis
Trematovalsa Jacobesco
Uleoporthe Petr.
Vismaya V.V. Sarma & K.D. Hyde
Wehmeyera J. Reid & C. Booth
Wuestneiopsis J. Reid & Dowsett

ACKNOWLEDGEMENTS

We thank Elias Jonk, Westerdijk Fungal Biodiversity Institute, for DNA isolation and sequencing of some of the included CBS cultures. Alan J.L. Phillips acknowledges the support from Biosystems and Integrative Sciences Institute (BioISI, FCT/UID/ Multi/04046/2013). Kevin D. Hyde thanks to National Research Council of Thailand (Mae Fah Luang University) for the grant ‘‘Biodiversity, phylogeny and role of fungal endophytes of Pandanaceae’’ (Grant No: 592010200112) and Thailand Research Fund (TRF) grant no RSA5980068 entitled ‘‘Biodiversity, phylogeny and role of fungal endophytes on above parts of *Rhizophora apiculata* and *Nypa fruticans*’’, the National Research Council of Thailand (Mae Fah Luang University) grant no 60201000201 entitled ‘‘Diseases of mangrove trees and maintenance of good forestry practice’’, and the Chinese Academy of Sciences, project number 2013T2S0030, for the award of Visiting Professorship for Senior International Scientists at Kunming Institute of Botany. Samantha C. Karunarathna thanks to Yunnan Provincial Department of Human Resources and Social Security funded postdoctoral project (number 179122).

REFERENCES

Alexopoulus CJ, Mims CW (1978). *Introductory Mycology, 3rd ed.* John Wiley, New York, USA.

Alvarez LV, Groenewald JZ, Crous PW (2016). Revising the *Schizoparmaceae*: *Coniella* and its synonyms *Pilidiella* and *Schizoparme*. *Studies in Mycology* **85**: 1–34.

Ananthapadmanaban D (1990). *Paravalsa indica* sp. nov. from India. *Mycological Research* **94**: 275–276.

Barney JN, Tharayil N, DiTommaso A, *et al.* (2006). The biology of invasive alien plants in Canada; *Polygonum cuspidatum* Sieb & Zucc [= *Fallopia japonica* (Houtt) Ronse Decr]. *Canadian Journal of Plant Science* **86**: 887–905.

Barr ME (1978). The *Diaporthales* in North America: with emphasis on *Gnomonia* and its segregates. *Mycologia Memoirs* **7**: 1–232.

Begoude BAD, Slippers B, Wingfield MJ, *et al.* (2010). *Botryosphaeriaceae* associated with *Terminalia catappa* in Cameroon, South Africa and Madagascar. *Mycological Progress* **9**: 101–123.

Belisario A (1991). *Dicarpella dryina* sp. nov., teleomorph of *Tubakia dryina*. *Mycotaxon* **41**: 147–155.

Belisario A (1999). Cultural characteristics and pathogenicity of *Melanconium juglandinum. European Journal of Forest Pathology* **29**: 317–322.

Biggs AR (1989). Integrated control of Leucostoma-canker of peach peach in Ontario. *Plant Disease* **73**: 869–874.

Braun U, Bien S, Hantsch L, *et al.* (2014). *Tubakia chinensis* sp. nov. and a key to the species of the genus *Tubakia*. *Schlechtendalia* **28**: 23–28.

Campbell J, Anderson JL, Shearer CA (2003). Systematics of *Halosarpheia* based on morphological and molecular data. *Mycologia* **95**: 530–552.

Cannon PF, Minter DW (2014). *Lamproconium desmazieresii. IMI Descriptions of Fungi & Bacteria* **1996**: 1–3. CABI Bioscience, Wallingford, UK.

Carbone I, Kohn LM (1999). A method for designing primer sets for speciation studies in filamentous ascomycetes. *Mycologia* **91**: 553–556.

Castlebury LA, Farr DF, Rossman AY, *et al.* (2003). *Diaporthe angelicae* comb nov, a modern description and placement of *Diaporthopsis* in *Diaporthe*. *Mycoscience* **44**: 203–208.

Castlebury LA, Rossman AY, Jaklitsch WJ, *et al.* (2002). A phylogeny overview of the *Diaporthales* based on large subunit nuclear ribosomal DNA sequences. *Mycologia* **94**: 1017–1031.

Cavara F (1889). Matériaux de mycologie Lombarde. *Revue Mycologique* **11**: 173−1913.

Chadefaud M (1960). Les Végétaux non Vasculaires (Cryptogamie). In: *Traité de Botanique Systématique* (Chadefaud M, Emberger L, eds). Masson, Paris: 1–1018.

Cheewangkoon R, Groenewald JZ, Verkley GJM, *et al.* (2010). Re-evaluation of *Cryptosporiopsis eucalypti* and cryptosporiopsis-like species occurring on *Eucalyptus* leaves. *Fungal Diversity* **44**: 89–105.

Chen SF, Wingfield MJ, Roux J (2013). *Diversimorbus metrosiderotis* gen. et sp. nov. and three new species of *Holocryphia* (*Cryphonectriaceae*) associated with cankers on native *Metrosideros angustifolia* trees in South Africa. *Fungal Biology* **117**: 289–310.

Chomnunti P, Hongsanan S, Aguirre-hudson B, *et al.* (2014). The sooty moulds. *Fungal Diversity* **66**: 1–36.

Corda ACI (1839). Coniomycetes Nees ab Esenb. *Icones Fungorum hucusque Cognitorum* **3**: 1–55.

Crane C, Burgess TI (2013). *Luteocirrhus shearii* gen. sp. nov. (*Diaporthales*, *Cryphonectriaceae*) pathogenic to *Proteaceae* in the South Western Australian Floristic Region. *IMA Fungus*. **4**: 111–122.

Crous PW, Carris LM, Giraldo A, *et al.* (2015). The Genera of Fungi: fixing the application of the type species of generic names – G 2: *Allantophomopsis*, *Latorua*, *Macrodiplodiopsis*, *Macrohilum*, *Milospium*, *Protostegia*, *Pyricularia*, *Robillarda*, *Rotula*, *Septoriella*, *Torula*, and *Wojnowicia*. *IMA Fungus* **6**: 163–198.

Crous PW, Gams W, Stalpers JA, *et al*. (2004). MycoBank: an online initiative to launch mycology into the 21st century. *Studies in Mycology* **50**: 19–22.

Crous PW, Knox-Davies PS, Wingfield MJ (1989). Newly-recorded foliage fungi of *Eucalyptus* sp. in South Africa. *Phytophylactica* **21**: 85–88.

Crous PW, Rogers JD (2001). *Wuestneia molokaiensis* and its anamorph *Harknessia molokaiensis* sp. nov. from *Eucalyptus*. *Sydowia* **53**: 74–80.

Crous PW, Summerell BA, Alfenas AC, *et al.* (2012a). Genera of diaporthalean coelomycetes associated with leaf spots of tree hosts. *Persoonia* **28**: 66–75.

Crous PW, Summerell BA, Shivas RG, *et al*. (2012b). A re-appraisal of *Harknessia* (*Diaporthales*), and the introduction of *Harknessiaceae* fam. nov. *Persoonia* **28**: 49–65.

Crous PW, Summerell BA, Shivas RG, *et al*. (2012c). Fungal Planet description sheets: 107–127: Molecular Phylogeny and Evolution of Fungi. *Persoonia* **28**: 138–182.

Crous PW, Verkley GJM, Groenewald JZ, *et al*. (eds) (2009). *Fungal biodiversity*. CBS laboratory manual series: 1. Centraalbureau voor Schimmelcultures, Utrecht, Netherlands: 1–269.

Crous PW, Wingfield MJ, Burgess TI, *et al*. (2017). Fungal Planet description sheets: 558–624. *Persoonia* **38**: 240–384.

Crous PW, Wingfield MJ, Guarro J, *et al*. (2013). Fungal Planet description sheets: 154–213. *Persoonia* **31**: 188–296.

Crous PW, Wingfield MJ, Nag Raj TR (1993). *Harknessia* species occurring in South Africa. *Mycologia* **85**: 275–280.

Crous PW, Wingfield MJ, Richardson DM, *et al*. (2016). Fungal Planet description sheets: 400–468. *Persoonia* **36**: 316–458.

Dai DQ, Wijayawardene NN, Bhat DJ, *et al*. (2014). *Pustulomyces* gen. nov. accommodated in *Diaporthaceae*, *Diaporthales*, as revealed by morphology and molecular analyses. *Cryptogamie, Mycologie* **35**: 63–72.

De Silva H, Castlebury LA, Green S, *et al*. (2009). Characterisation and phylogenetic relationships of *Anisogramma virgultorum* and *A. anomala* in the *Diaporthales* (Ascomycota). *Mycological Research* **113**: 73–81.

Du Z, Hyde KD, Yang Q, *et al*. (2017). *Melansporellaceae*: a novel family of *Diaporthales* (Ascomycota). *Phytotaxa* **305**: 191–200.

Eriksson OE (2001). Outline of Ascomycota. *Myconet* **6**: 1–27.

Eriksson OE, Winka K (1997). Supraordinal taxa of Ascomycota. *Myconet* **1**: 1–16.

Fabre JH (1883). Essai sur les Sphériacées du département de Vaucluse [concl]. *Annales des Sciences Naturelles Botanique*. **6**: 31–43.

Farr DF, Bills GF, Chamuris GP, *et al*. (1989). *Fungi on plant and plant products in the United States*. APS Press, St Paul, MN.

Farr DF, Rossman AY (2001). *Harknessia lythri*, a new species on purple loosestrife. *Mycologia* **93**: 997–1001.

Farr DF, Rossman AY (2017). Fungal Databases Beltsville, MD: Systematic Mycology and Microbiology Laboratory, ARS, USDA; http://ntars-gringov/fungaldatabases/

Felsenstein J (1985). Confidence limits on phylogenies: an approach using the bootstrap. *Evolution* **39**: 783–791.

Ferreira FA, Demuner NL, Rezende DV (1992). Mancha de folha, des folha e antracnose do Jatobá (*Hymenaea* spp) causadas por *Erythrogloeum hymenaeae*. *Fitopatologia Brasileira* **17**: 106–109.

Gao Y, Liu F, Duan W (2016). *Diaporthe* is paraphyletic. *IMA Fungus* **8**: 153–187.

Glass NL, Donaldson G (1995). Development of primer sets designed for use with PCR to amplify conserved genes from filamentous ascomycetes. *Applied and Environmental Microbiology* **61**: 1323–1330.

Gomes RR, Glienke C, Videira SIR, *et al*. (2013). *Diaporthe*: a genus of endophytic, saprobic and plant pathogenic fungi. *Persoonia* **31**: 1–41.

Gramaje D, Mostert L, Groenewald JZ, *et al*. (2015). *Phaeoacremonium*: From esca disease to phaeohyphomycosis. *Fungal Biology* **119**: 759–783.

Graves AH (1923). The *Melanconis* disease of the butternut (*Juglans cinerea* L). *Phytopathology* **13**: 411–435.

Grove WB (1937). British stem and leaf-fungi. *Coelomycetes* **2**: 1–406.

Gryzenhout M, Myburg H, Hodges CS, *et al*. (2006a). *Microthia*, *Holocryphia* and *Ursicollum*, three new genera on *Eucalyptus* and *Coccoloba* for fungi previously known as *Cryphonectria*. *Studies in Mycology* **55**: 35–52.

Gryzenhout M, Myburg H, Rodas CA, *et al*. (2006b). *Aurapex penicillata* gen. sp. nov. from native *Miconia theaezans* and *Tibouchina* spp. in Colombia. *Mycologia*. **98**: 105–15.

Gryzenhout M, Myburg H, Wingfield BD (2006c). *Cryphonectriaceae* (*Diaporthales*), a new family including *Cryphonectria*, *Chrysoporthe*, *Endothia* and allied genera. *Mycologia* **98**: 239–249.

Gryzenhout M, Tarigan M, Clegg PA, *et al*. (2010). *Cryptometrion aestuescens* gen. sp. nov. (*Cryphonectriaceae*) pathogenic to *Eucalyptus* in Indonesia. *Australasian Plant Pathology* **39**: 161–169.

Gryzenhout M, Wingfield BD, Wingfield MJ (2009). *Taxonomy, phylogeny and ecology of bark-infecting and tree-killing fungi in the Cryphonectriaceae*. St Paul, Minnesota: APS Press, 1–378.

Hall TA (1999). BioEdit: a user-friendly biological sequence alignment editor and analysis program for Windows 95/98/NT. *Nucleic Acids Symposium Series* **41**: 95–98.

Hawksworth DL, Kirk PM, Sutton BC, *et al*. (1995). *Ainsworth & Bisby's Dictionary of the Fungi 8th edition*. CAB International, Wallingford.

Hepting GH (1974). Death of the American chestnut. *Journal of Forest History* **18**: 60–67.

Index Fungorum (2017). Retrieved 24 April 2017, from http://wwwindexfungorumorg/Names/Namesasp

Jackson T (2003). *Occurrence and variation of Endothiella eucalypti in Eucalyptus globulus plantations of south-western Australia and the influence of some biotic and abiotic factors on the response of the host to the pathogen*. Ph.D. dissertation. School of Biological Sciences and Biotechnology, Murdoch University Perth, Western Australia.

Jeewon R, Hyde KD (2016). Establishing species boundaries and new taxa among fungi: recommendations to resolve taxonomic ambiguities. *Mycosphere* **7**: 1669–1677.

Jeewon R, Liew ECY, Hyde KD (2002). Phylogenetic relationships of *Pestalotiopsis* and allied genera inferred from ribosomal DNA sequences and morphological characters. *Molecular Phylogenetics and Evolution* **25**: 378–392.

Jones EBG, Suetrong S, Sakayaroj J, *et al*. (2015). Classification of marine Ascomycota, Basidiomycota, Blastocladiomycota and Chytridiomycota. *Fungal Diversity* **73**: 1–72.

Kepley JB, Jacobi WR (2000). Pathogenicity of *Cytospora* fungi on six hardwood species. *Journal of Aboriculture* **26**: 326–332.

Kishino H, Hasegawa M (1989). Evaluation of the maximum likelihood estimate of the evolutionary tree topologies from DNA sequence data. *Journal of Molecular Evolution* **29**: 170–179.

Lamprecht SC, Crous PW, Groenewald JZ, *et al*. (2011). *Diaporthaceae* associated with root and crown rot of maize. *IMA Fungus* **2**: 13–24.

Lee S, Groenewald JZ, Crous PW (2004). Phylogenetic reassessment of the coelomycete genus *Harknessia* and its teleomorph *Wuestneia* (*Diaporthales*), and the introduction of *Apoharknessia* gen. nov. *Studies in Mycology* **50**: 235–252.

Lennox CL, Serdani M, Groenewald JZ, *et al*. (2004). *Prosopidicola mexicana* gen. et. sp. nov., causing a new pod disease of *Prosopis* species. *Studies in Mycology* **50**: 187–194.

Link HF (1826). Entwurf eines phytologischen Pflanzensystems nebst einer Anordnung der Kryptogamen. *Abhandlungen der königlichen Akademie der Wissenschaften zu Berlin aus dem Jahre* **1824**: 145–194.

Liu Y, Whelen S, Hall BD (1999). Phylogenetic relationships among ascomycetes: evidence from an RNA polymerase II subunit. *Molecular Biology and Evolution* **16**: 1799–1808.

Locquin MV (1984). *Mycologie Générale et Structurale*. Paris, Masson.

Lumbsch HT, Huhndorf SM (2010). Myconet Volume 14 Part One Outline of Ascomycota – 2009 Part Two Notes on Ascomycete Systematics Nos 4751–5113. *Fieldiana Life Earth Sciences* **1**: 1–64.

Luttrell ES (1951). Taxonomy of Pyrenomycetes. *University of Missouri Studies* **24**: 1–120.

Maharachchikumbura SS, Hyde KD, Jones EBG, *et al*. (2015). Towards a natural classification and backbone tree for *Sordariomycetes*. *Fungal Diversity* **72**: 199–301.

Maharachchikumbura SSN, Hyde KD, Jones EBG, *et al*. (2016). Families of *Sordariomycetes*. *Fungal Diversity* **79**: 1–317.

Mariani (1911). *Pyrenomycetae, Sphaeriaceae, Guignardia*. *Atti della Societa Italiana di Scienze Naturali e del Museo Civico di Storia Naturale di Milano* **50**: 1–165.

Marincowitz S, Crous PW, Groenewald JZ, *et al*. (2008). Microfungi occurring on *Proteaceae* in the fynbos. *CBS Biodiversity Series* **7**: 1–166.

Mejía LC, Castlebury LA, Rossman AY, *et al*. (2011). A systematic account of the genus *Plagiostoma* (*Gnomoniaceae*, *Diaporthales*) based on morphology, host-associations, and a four-gene phylogeny. *Studies in Mycology* **68**: 211–235.

Monod M (1983). Monographie taxonomique des *Gnomoniaceae* (Ascomycetes de l'ordre des *Diaporthales*) I Beih. *Sydowia* **9**: 1–315.

Mostert L, Groenewald JZ, Summerbell RC, *et al*. (2006). Taxonomy and pathology of *Togninia* (*Diaporthales*) and its *Phaeoacremonium* anamorphs. *Studies in Mycology* **54**: 1–115.

MycoBank (2017). http://wwwmycobankorg/defaultinfoaspx?Page=Home.

Nag Raj TR (1993). *Coelomycetous anamorphs with appendage-bearing conidia*. Mycologue publications, Waterloo, Canada: 1–1101.

Nakabonge G, Gryzenhout M, Roux J, *et al*. (2006). *Celoporthe dispersa* gen. et sp. nov. from native *Myrtales* in South Africa. *Studies in Mycology* **55**: 255–267.

Nannfeldt JA (1932). Studien über die Morphologie und Systematik der nichlichenisierten inoperculaten Discomyceten. *Nova Acta Regiae Societatis Scientiarum Upsaliensis Series 4,* **8**: 1–368.

Navarrete F, Abreo E, Bettucci L, *et al*. (2009). First report of *Greeneria uvicola* as cause of grapevine dead-arm dieback in Uruguay. *Australasian Plant Disease Notes* **4**: 117–119.

Norphanphoun C, Doilom M, Daranagama DA, *et al*. (2017). Revisiting the genus *Cytospora* and allied species. *Mycosphere* **8**: 51–97.

Norphanphoun C, Hongsanan S, Doilom M, *et al*. (2016). *Lamproconiaceae* fam. nov. to accommodate *Lamproconium desmazieri*. *Phytotaxa* **270**: 89–102.

Nylander JAA (2004). *MrModeltest v. 2*. Program distributed by the Author. Evolutionary Biology Centre, Uppsala University.

Petrak F (1938). Beiträge zur Kenntnis der Gattung *Hercospora* mit besonderer Berücksichtigung ihrer Typusart *Hercospora tiliae* (Pers) Fr. *Annales Mycologici* **36**: 44−60.

Petrak F (1953). *Erythrogloeum* nov gen, eine neue Gattung der Sphaeropsideen. *Sydowia* **7**: 378–380.

Petrak F (1971). Ergebnisse einer Revision der Grundtypen verscheidener Gattungen der Ascomyzeten und Fungi Imperfecti. *Sydowia* **24**: 249–255.

Phillips AJL, Alves A, Pennycook SR, *et al.* (2008). Resolving the phylogenetic and taxonomic status of dark-spored teleomorph genera in the *Botryosphaeriaceae*. *Persoonia* **21**: 29–55.

Potebnia A (1910). Beiträge zur Micromycetenflora Mittel-Russlands (Gouv Kursk und Charkow). *Annales Mycologici* **8**: 42–93.

Punithalingam E (1974). Studies on *Sphaeropsidales* in culture II. *Mycological Papers* **136**: 1–63.

Rambaut A (2012). *Fig.Tree. Tree Figure Drawing Tool, v. 1.4.0* http://tree.bio.ed.ac.uk/software/figtree/.

Rayner RW (1970). *A mycological colour chart*. CMI and British Mycological Society, Kew, UK.

Réblová M, Mostert L, Gams W, *et al*. (2004). New genera in the *Calosphaeriales*: *Togniniella* and its anamorph *Phaeocrella*, and *Calosphaeriophora* as anamorph of *Calosphaeria*. *Studies in Mycology* **50**: 533–550.

Rehner SA, Samuels GJ (1994). Taxonomy and phylogeny of *Gliocladium* analysed from nuclear large subunit ribosomal DNA sequences. *Mycological Research* **98**: 625–634.

Reid J, Dowsettj A (1990). On *Dicarpella*, *Sphaerognomonia* and *Apiosporopsis*. *Canadian Journal of Botany* **68**: 2398–2407.

Ronquist F, Teslenko M, van der Mark P, *et al.* (2012). MrBayes 3.2: efficient Bayesian phylogenetic inference and model choice across a large model space. *Systematic Biology* **61**: 539–542.

Rossman AY, Adams GC, Cannon PF, *et al*. (2015). Recommendations of generic names in *Diaporthales* competing for protection or use. *IMA Fungus* **6**: 145–154.

Rossman AY, Castlebury LA, Samuels GJ (2006). Phylogeny and biodiversity of the *Hypocreales* and *Diaporthales*. In: *Eighth International Mycological Congress, 21–25, August 2006*, Cairns Congress Handbook & Abstracts, Book 2.

Rossman AY, Farr DF, Castlebury LA (2007). A review of the phylogeny and biology of the *Diaporthales*. *Mycoscience* **48**: 135–144.

Scribner FL, Viala P (1887). Le *Greeneria fuliginea*, nouvelle forme de rot des fruits de lab vigne observee en Amärique. *Comptes rendus Hebdomadaires des Séances de l'Académie des Sciences* **105**: 473.

Seifert KA, Rossman AY (2010). How to describe a new fungal species. *IMA Fungus* **1**: 109–116.

Senanayake IC, Maharachchikumbura SSN, Hyde KD, *et al*. (2015). Towards unraveling relationships in *Xylariomycetidae* (*Sordariomycetes*). *Fungal Diversity* **73**: 73–144.

Senanayake IC, Maharachchikumbura SSN, Jeewon R, *et al.* (2017). Morphophylogenetic study of *Sydowiellaceae* reveals several new genera. *Mycosphere* **8**: 172–217.

Serrato-Diaz LM, Rivera-Vargas LI, Goenaga R, *et al.* (2011). First report of a *Lasmenia* sp causing rachis necrosis, flower abortion, fruit rot, and leaf spots on rambutan in Puerto Rico. *Plant Disease* **95**: 1311–1313.

Shipton PJ (1967). A fruit rot of strawberries caused by *Zythia fragariae*. *Plant Pathology* **16**: 123–125.

Sieber TN, Sieber-Canavesi F, Petrini O, *et al*. (1991). Characterization of Canadian and European *Melanconium* from some *Alnus* species by morphological, cultural and biochemical studies. *Canadian Journal of Botany* **69**: 2170–2176.

Silvestro D, Michalak I (2012). raxmlGUI: a graphical front-end for RAxML. *Organisms Diversity & Evolution* **12**: 335–337.

Sinclair WA, Hudler GW (1980). Tree and shrub pathogens new or noteworthy in New York state. *Plant Disease* **64**: 590–592.

Sogonov MV, Castlebury LA, Rossman AY, *et al*. (2008). Leaf-inhabiting genera of the *Gnomoniaceae*, *Diaporthales*. *Studies in Mycology* **62**: 1–79.

Stamatakis A, Hoover P, Rougemont J (2008). A rapid bootstrap algorithm for the RAxML web servers. *Systematic Biology* **57**: 758–771.

Suetrong S, Klaysuban A, Sakayaroj J, *et al.* (2015). *Tirisporellaceae*, a new family in the order *Diaporthales* (*Sordariomycetes*, Ascomycota). *Cryptogamie, Mycologie* **36**: 319–330.

Sutton BC (1980). *The Coelomycetes Fungi imperfecti with pycnidia, acervuli and stromata*. Kew, UK, Commonwealth Mycological Institute.

Suwannarach N, Kumla J, Lumyong S (2016). *Pseudoplagiostoma dipterocarpi* sp. nov., a new endophytic fungus from Thailand. *Mycoscience* **57**: 118–122.

Swofford DL (2003). *PAUP* Phylogenetic Analysis Using Parsimony (*and Other Methods) Version 4*. Sinauer Associates, Sunderland, Massachusetts.

Tanaka K, Mel'nik VA, Kamiyama M, *et al*. (2010). Molecular phylogeny of two coelomycetous fungal genera with stellate conidia, *Prosthemium* and *Asterosporium*, on Fagales trees. *Botany* **88**: 1057–1071.

Taylor JW, Jacobson DJ, Kroken S, *et al*. (2000). Phylogenetic species recognition and species concepts in fungi. *Fungal Genetics and Biology* **31**: 21–32.

Traverso GB (1907). Flora Italica Cryptogama Pars 1: Fungi Pyrenomycetae Sphaeriaceae: Allantosporae, Hyalosporae, Phaeosporae. Rocca S Casciano, Italy: *Società Botanica Italiana* **1**: 353–492.

Treigien A, Markovskaja S (2007). Microscopic fungi on *Carpinus Betulus* in Lithuania 2. *Anamorphic Fungi Botanica Lithuanica* **13**: 45–50.

Udayanga D, Castlebury LA, Rossman AY, *et al*. (2014). Insights into the genus *Diaporthe*: phylogenetic species delimitation in the *D. eres* species complex. *Fungal Diversity* **67**: 203–229.

Udayanga D, Xingzhong L, McKenzie EHC, *et al.* (2011). The genus *Phomopsis*: biology, applications, species concepts and names of common pathogens. *Fungal Diversity* **50**: 189–225.

Van der Aa HA (1973). Studies in *Phyllosticta* I. *Studies in Mycology* **5**: 1–110.

Van Niekerk JM, Crous PW, *et al*. (2004). DNA phylogeny, morphology and pathogenicity of *Botryosphaeria* species on grapevines. *Mycologia* **96**: 781–798.

Vasilyeva LN (1993). *Chromendothia*, a new genus of the family *Hypocreaceae*. *Mikologiya i Fitopatologiya* **27**:1–7.

Vasilyeva LN, Rossman AY, Farr DF (2007). New species of the *Diaporthales* from eastern Asia and eastern North America. *Mycologia* **99**: 916–923.

Verkley GJM, Quaedvlieg W, Shin HD, *et al*. (2013). A new approach to species delimitation in *Septoria*. *Studies in Mycology* **75**: 213–305.

Vermeulen M, Gryzenhout M, Wingfield MJ, *et al*. (2011). New records of the *Cryphonectriaceae* from southern Africa including *Latruncellus aurorae* gen. sp. nov. *Mycologia* **103**: 554–569.

Vilgalys R, Hester M (1990). Rapid genetic identification and mapping of enzymatically amplified ribosomal DNA from several *Cryptococcus* species. *Journal of Bacteriology* **172**: 4239–4246.

Voglmayr H, Castlebury LA, Jaklitsch WM (2017). *Juglanconis* gen. nov. on *Juglandaceae*, and the new family *Juglanconidaceae* (*Diaporthales*). *Persoonia* **38**: 136–155.

Voglmayr H, Jaklitsch WM (2008). *Prosthecium* species with *Stegonsporium* anamorphs on *Acer*. *Mycological Research* **112**: 885–905.

Voglmayr H, Jaklitsch WM (2014). *Stilbosporaceae* resurrected: generic reclassification and speciation. *Persoonia* **33**: 61–82.

Voglmayr H, Rossman AY, Castlebury LA, *et al*. (2012). Multigene phylogeny and taxonomy of the genus *Melanconiella* (*Diaporthales*). *Fungal Diversity* **57**: 1–44.

Von Arx JA, Müller E (1954). Die Gattungen der amerosporen Pyrenomyceten. *Beiträge zur Kryptogamenflora der Schweiz* **11**: 1–434.

Von Höhnel FXR (1910). Fragmente zur Mykologie no. 538. *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften in Wien* **119**: 632–633.

Von Höhnel FXR (1917). Über die Benennung Stellung und Nebenfruchtformen von *Sphaerella* Fries. *Berichte der Deutschen Botanischen Gesellschaft* **35**: 627–631.

Walker DM, Castlebury LA, Rossman AY, *et al*. (2010). Systematics of genus *Gnomoniopsis* (*Gnomoniaceae*, *Diaporthales*) based on a three gene phylogeny, host associations and morphology. *Mycologia* **102**: 1479–1496.

Walker DM, Castlebury LA, Rossman AY, *et al*. (2012). Phylogeny and taxonomy of *Ophiognomonia* (*Gnomoniaceae*, *Diaporthales*), including twenty-five new species in this highly diverse genus. *Fungal Diversity* **57**: 85–147.

Wehmeyer LE (1975). The Pyrenomycetous Fungi. *Mycologia Memoirs* **6**: 1–250.

White T, Bruns T, Lee S, *et al*. (1990). Amplification and direct sequencing of fungal ribosomal RNA genes for phylogenetics. In: *PCR Protocols: A Guide to Methods and Applications* (Innis MA, Gelfand DH, Sninsky JJ, White TJ, eds). Academic Press, San Diego, California: 315−322.

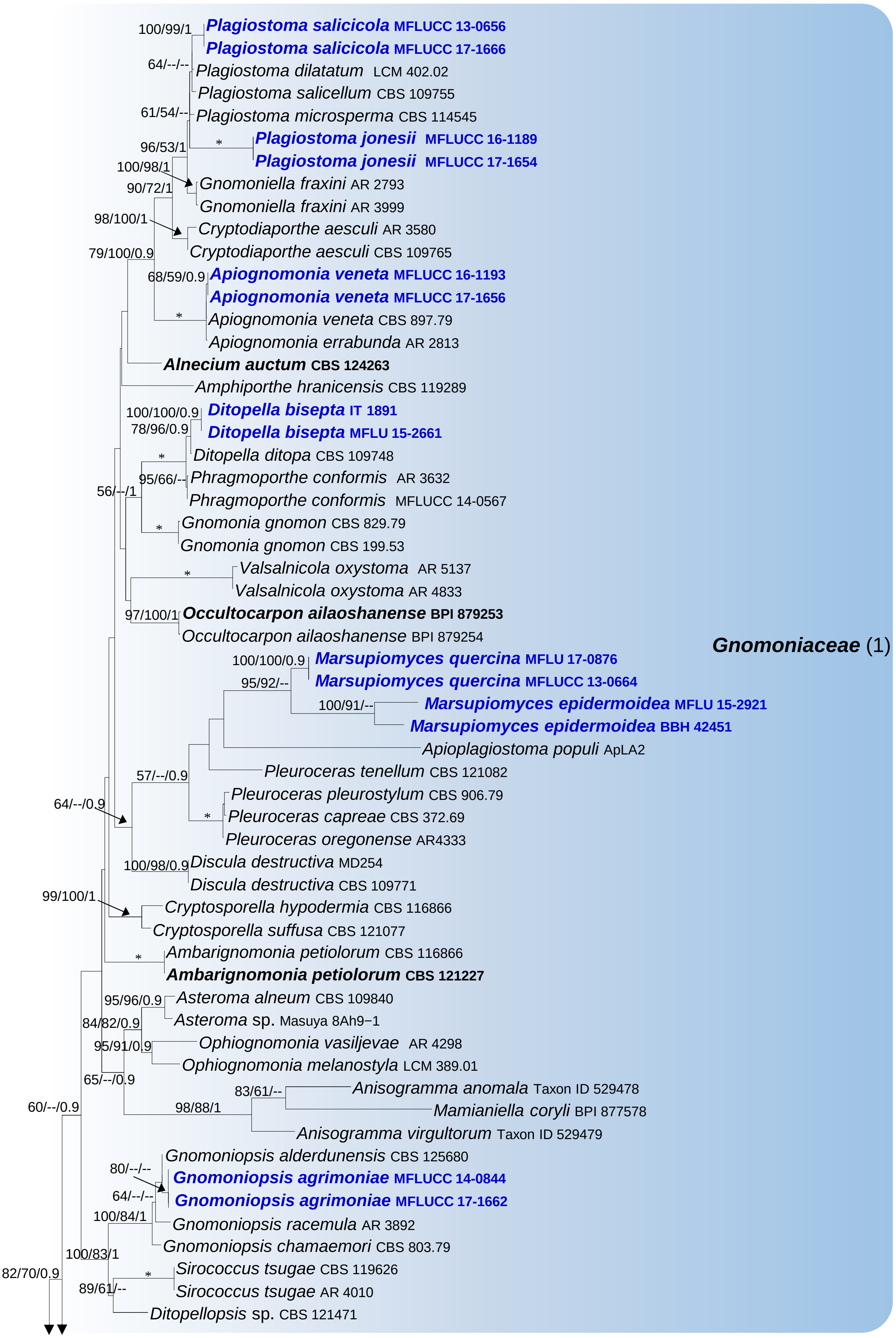
Wijayawardene NN, Hyde KD, Wanasinghe DN, *et al*. (2016). Taxonomy and phylogeny of dematiaceous coelomycetes. *Fungal Diversity* **77**: 1–316.

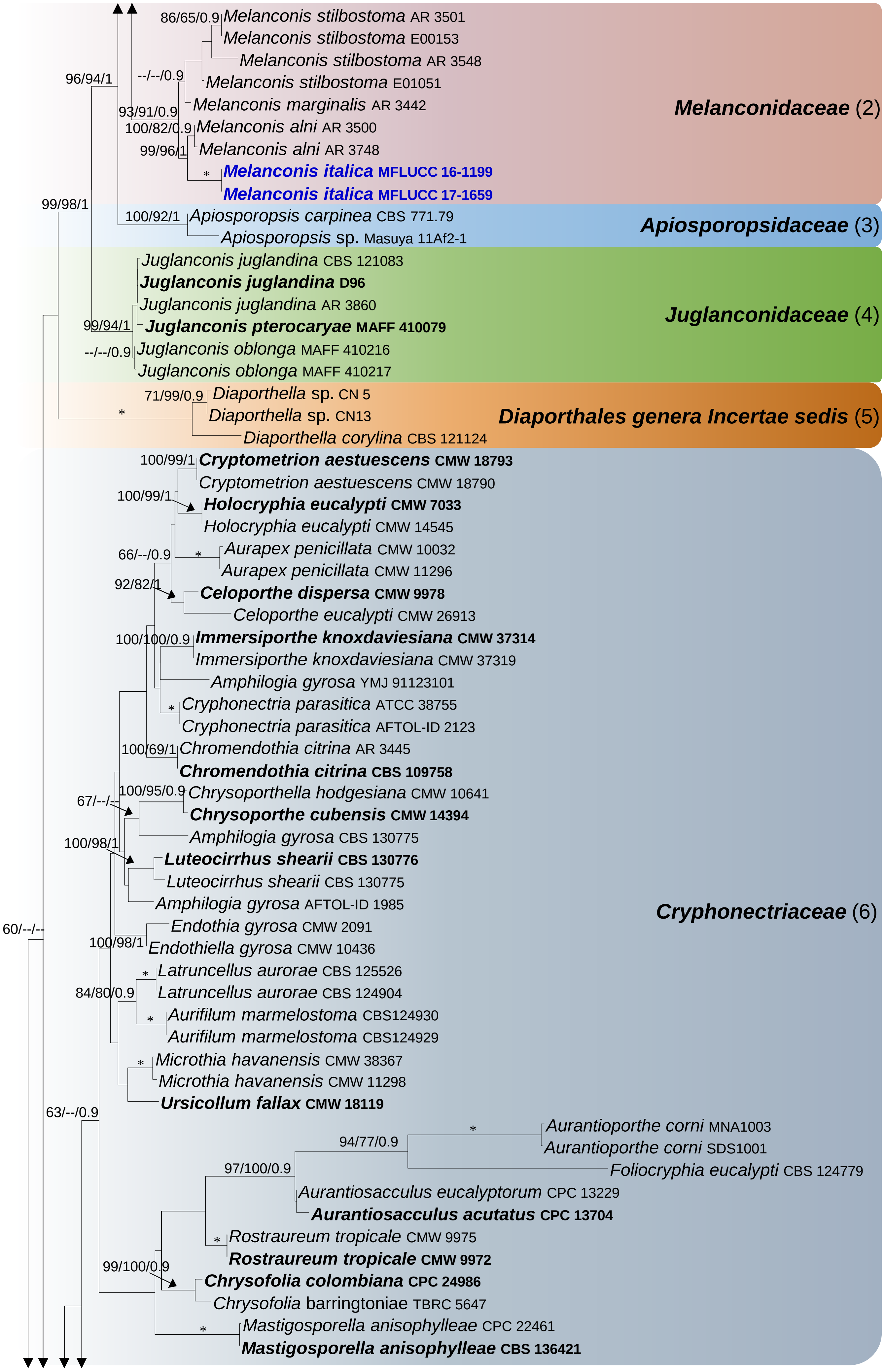
Winter G (1886). Fungi Australienses. *Revue Mycologique Toulouse* **8**: 207–213.

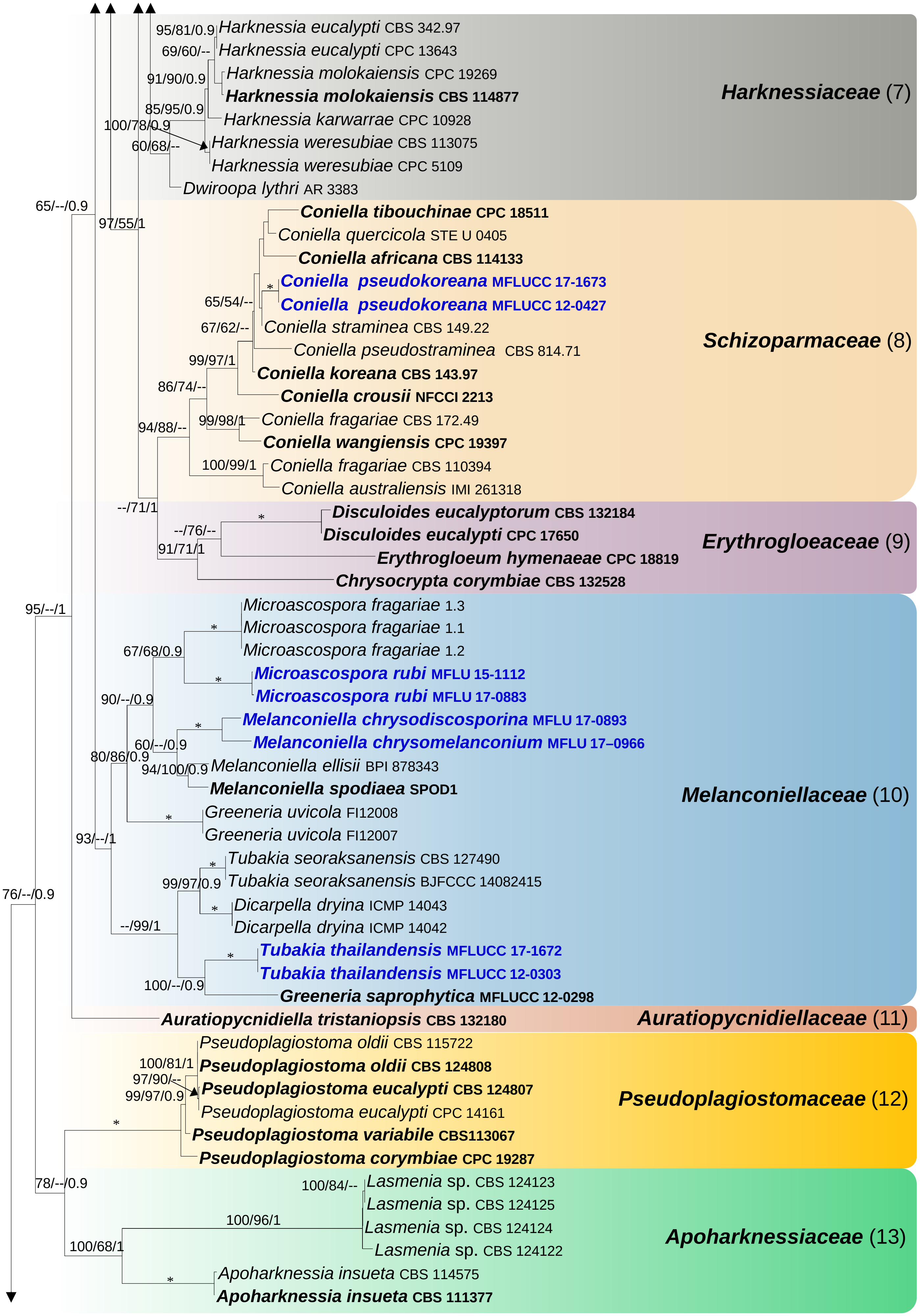
Yuan ZQ, Mohammed C (1997). *Wuestneia epispora* sp. nov. on stems of eucalypts from Australia. *Mycological Research* **101**: 195–200.

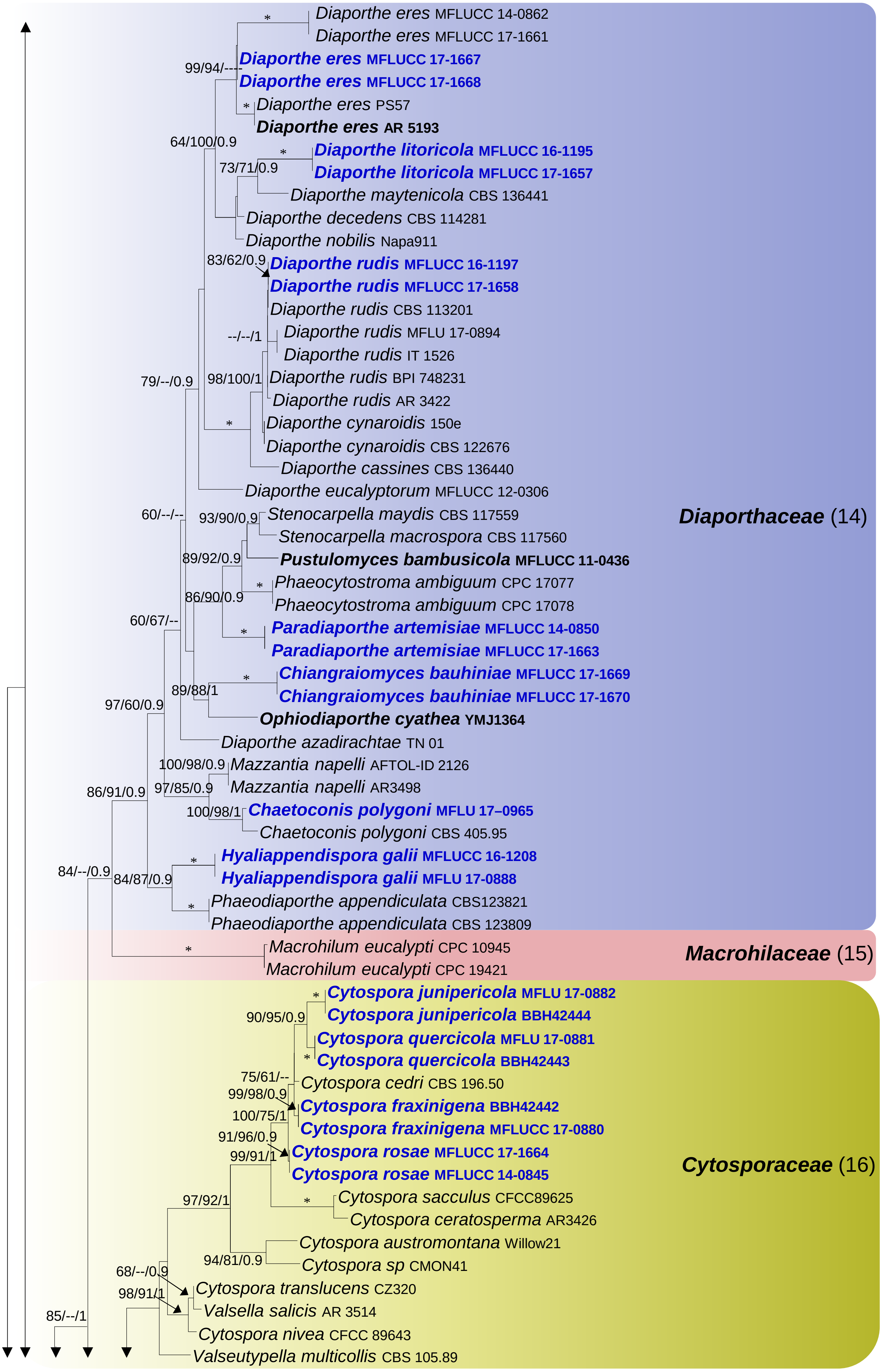
Yuan ZQ, Wardlaw T, Mohammed C (2000). *Harknessia* species occurring on eucalypt leaves in Tasmania, Australia. *Mycological Research* **104**: 888–892.

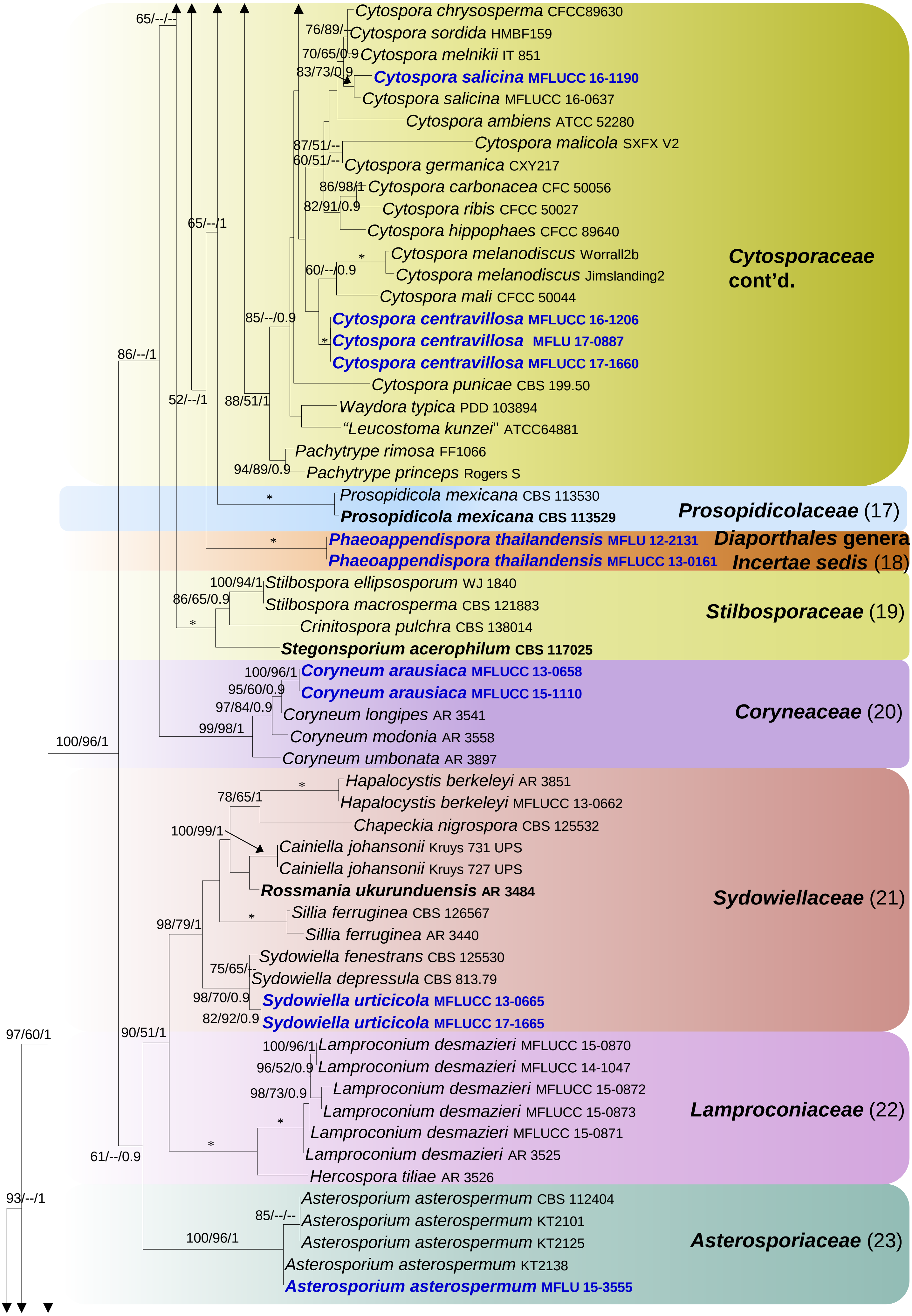
Zhang N, Blackwell M (2001). Molecular phylogeny of dogwood anthracnose fungus (*Discula destructiva*) and the *Diaporthales*. *Mycologia* **93**: 355–365.

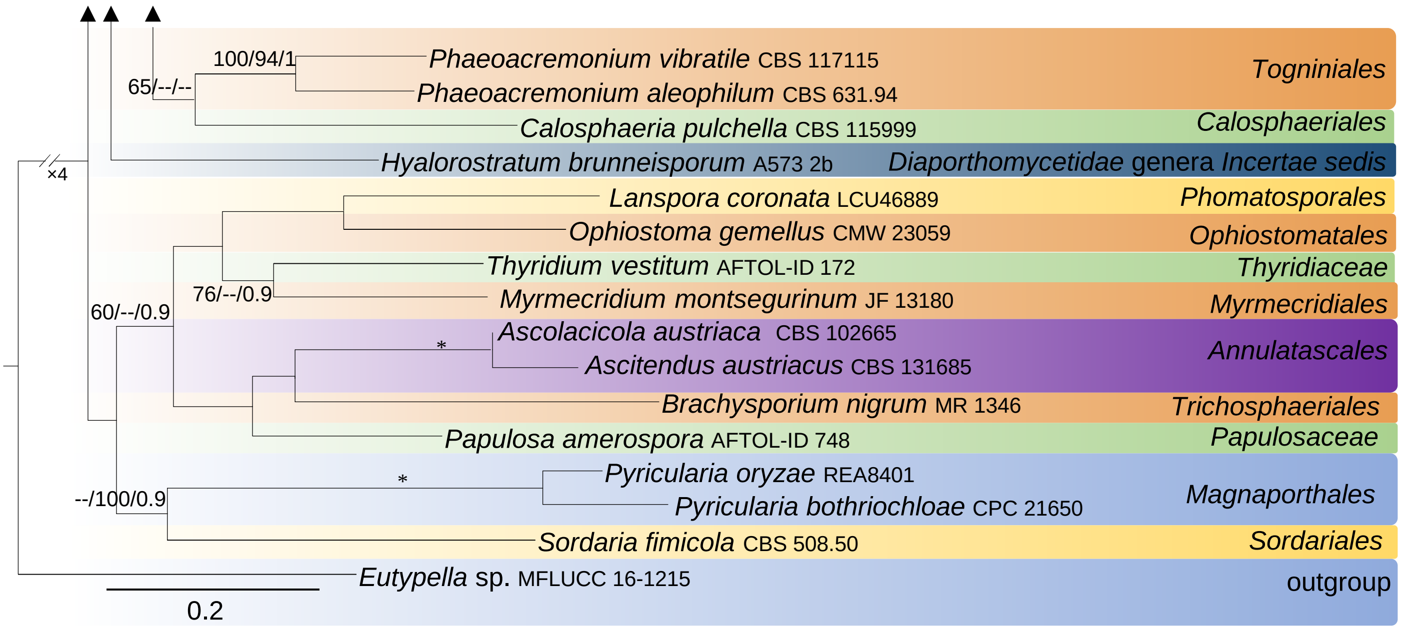

100/99/1
Plagiostoma salicicola MFLUCC 13-0656
Plagiostoma salicicola MFLUCC 17-1666
64/--/--
Plagiostoma dilatatum LCM 402.02
Plagiostoma salicellum CBS 109755
61/54/--
Plagiostoma microsperma CBS 114545
96/53/1
*
Plagiostoma jonesii MFLUCC 16-1189
Plagiostoma jonesii MFLUCC 17-1654
100/98/1
Gnomoniella fraxini AR 2793
90/72/1
Gnomoniella fraxini AR 3999
98/100/1
Cryptodiaporthe aesculi AR 3580
Cryptodiaporthe aesculi CBS 109765
79/100/0.9
68/59/0.9
Apiognomonia veneta MFLUCC 16-1193
Apiognomonia veneta MFLUCC 17-1656
*
Apiognomonia veneta CBS 897.79
Apiognomonia errabunda AR 2813
Alnecium auctum CBS 124263
Amphiporthe hranicensis CBS 119289
100/100/0.9
Ditopella bisepta IT 1891
78/96/0.9
Ditopella bisepta MFLU 15-2661
*
Ditopella ditopa CBS 109748
95/66/--
Phragmoporthe conformis AR 3632
56/--/1
Phragmoporthe conformis MFLUCC 14-0567
*
Gnomonia gnomon CBS 829.79
Gnomonia gnomon CBS 199.53
*
Valsalnicola oxystoma AR 5137
Valsalnicola oxystoma AR 4833
97/100/1
Occultocarpon ailaoshanense BPI 879253
Occultocarpon ailaoshanense BPI 879254
Gnomoniaceae (1)
100/100/0.9
Marsupiomyces quercina MFLU 17-0876
95/92/--
Marsupiomyces quercina MFLUCC 13-0664
100/91/--
Marsupiomyces epidermoidea MFLU 15-2921
Marsupiomyces epidermoidea BBH 42451
Apioplagiostoma populi ApLA2
Pleuroceras tenellum CBS 121082
57/--/0.9
Pleuroceras pleurostylum CBS 906.79
64/--/0.9
*
Pleuroceras capreae CBS 372.69
Pleuroceras oregonense AR4333
100/98/0.9
Discula destructiva MD254
Discula destructiva CBS 109771
99/100/1
Cryptosporella hypodermia CBS 116866
Cryptosporella suffusa CBS 121077
*
Ambarignomonia petiolorum CBS 116866
Ambarignomonia petiolorum CBS 121227
95/96/0.9
Asteroma alneum CBS 109840
84/82/0.9
Asteroma sp. Masuya 8Ah9−1
95/91/0.9
Ophiognomonia vasiljevae AR 4298
Ophiognomonia melanostyla LCM 389.01
65/--/0.9
83/61/--
Anisogramma anomala Taxon ID 529478
60/--/0.9
98/88/1
Mamianiella coryli BPI 877578
Anisogramma virgultorum Taxon ID 529479
Gnomoniopsis alderdunensis CBS 125680
80/--/--
Gnomoniopsis agrimoniae MFLUCC 14-0844
64/--/--
Gnomoniopsis agrimoniae MFLUCC 17-1662
100/84/1
Gnomoniopsis racemula AR 3892
Gnomoniopsis chamaemori CBS 803.79
100/83/1
*
Sirococcus tsugae CBS 119626
82/70/0.9
89/61/--
Sirococcus tsugae AR 4010
Ditopellopsis sp. CBS 121471


86/65/0.9
Melanconis stilbostoma AR 3501
Melanconis stilbostoma E00153
Melanconis stilbostoma AR 3548
Melanconis stilbostoma E01051
Melanconis marginalis AR 3442
Melanconis alni AR 3500
Melanconis alni AR 3748
Melanconis italica MFLUCC 16-1199
Melanconis italica MFLUCC 17-1659
96/94/1
--/--/0.9
93/91/0.9
100/82/0.9
99/96/1
*
Melanconidaceae (2)
99/98/1
100/92/1
Apiosporopsis carpinea CBS 771.79
Apiosporopsis sp. Masuya 11Af2-1
Apiosporopsidaceae (3)
Juglanconis juglandina CBS 121083
Juglanconis juglandina D96
Juglanconis juglandina AR 3860
Juglanconis pterocaryae MAFF 410079
Juglanconis oblonga MAFF 410216
Juglanconis oblonga MAFF 410217
99/94/1
--/--/0.9
Juglanconidaceae (4)
71/99/0.9
Diaporthella sp. CN 5
Diaporthella sp. CN13
Diaporthella corylina CBS 121124
*
Diaporthales genera Incertae sedis (5)
100/99/1
Cryptometrion aestuescens CMW 18793
Cryptometrion aestuescens CMW 18790
100/99/1
Holocryphia eucalypti CMW 7033
Holocryphia eucalypti CMW 14545
66/--/0.9
*
Aurapex penicillata CMW 10032
Aurapex penicillata CMW 11296
92/82/1
Celoporthe dispersa CMW 9978
Celoporthe eucalypti CMW 26913
100/100/0.9
Immersiporthe knoxdaviesiana CMW 37314
Immersiporthe knoxdaviesiana CMW 37319
Amphilogia gyrosa YMJ 91123101
*
Cryphonectria parasitica ATCC 38755
Cryphonectria parasitica AFTOL-ID 2123
100/69/1
Chromendothia citrina AR 3445
Chromendothia citrina CBS 109758
100/95/0.9
Chrysoporthella hodgesiana CMW 10641
67/--/--
Chrysoporthe cubensis CMW 14394
Amphilogia gyrosa CBS 130775
100/98/1
Luteocirrhus shearii CBS 130776
Luteocirrhus shearii CBS 130775
Amphilogia gyrosa AFTOL-ID 1985
Cryphonectriaceae (6)
60/--/--
Endothia gyrosa CMW 2091
100/98/1
Endothiella gyrosa CMW 10436
*
Latruncellus aurorae CBS 125526
84/80/0.9
Latruncellus aurorae CBS 124904
*
Aurifilum marmelostoma CBS124930
Aurifilum marmelostoma CBS124929
*
Microthia havanensis CMW 38367
Microthia havanensis CMW 11298
Ursicollum fallax CMW 18119
63/--/0.9
*
Aurantioporthe corni MNA1003
94/77/0.9
Aurantioporthe corni SDS1001
Foliocryphia eucalypti CBS 124779
97/100/0.9
Aurantiosacculus eucalyptorum CPC 13229
Aurantiosacculus acutatus CPC 13704
*
Rostraureum tropicale CMW 9975
Rostraureum tropicale CMW 9972
99/100/0.9
Chrysofolia colombiana CPC 24986
Chrysofolia barringtoniae TBRC 5647
*
Mastigosporella anisophylleae CPC 22461
Mastigosporella anisophylleae CBS 136421


95/81/0.9 Harknessia eucalypti CBS 342.97
69/60/-- Harknessia eucalypti CPC 13643
91/90/0.9 Harknessia molokaiensis CPC 19269
Harknessia molokaiensis CBS 114877
85/95/0.9 Harknessia karwarrae CPC 10928
100/78/0.9 Harknessia weresubiae CBS 113075
60/68/-- Harknessia weresubiae CPC 5109
Dwiroopa lythri AR 3383
Harknessiaceae (7)
65/--/0.9
97/55/1
Coniella tibouchinae CPC 18511
Coniella quercicola STE U 0405
Coniella africana CBS 114133
* Coniella pseudokoreana MFLUCC 17-1673
Coniella pseudokoreana MFLUCC 12-0427
65/54/--
67/62/-- Coniella straminea CBS 149.22
Coniella pseudostraminea CBS 814.71
99/97/1 Coniella koreana CBS 143.97
86/74/-- Coniella crousii NFCCI 2213
94/88/-- 99/98/1 Coniella fragariae CBS 172.49
Coniella wangiensis CPC 19397
100/99/1 Coniella fragariae CBS 110394
Coniella australiensis IMI 261318
Schizoparmaceae (8)
--/71/1
* Disculoides eucalyptorum CBS 132184
--/76/-- Disculoides eucalypti CPC 17650
91/71/1 Erythrogloeum hymenaeae CPC 18819
Chrysocrypta corymbiae CBS 132528
Erythrogloeaceae (9)
95/--/1
Microascospora fragariae 1.3
* Microascospora fragariae 1.1
Microascospora fragariae 1.2
67/68/0.9
* Microascospora rubi MFLU 15-1112
Microascospora rubi MFLU 17-0883
90/--/0.9
* Melanconiella chrysodiscosporina MFLU 17-0893
Melanconiella chrysomelanconium MFLU 17–0966
60/--/0.9
80/86/0.9
94/100/0.9 Melanconiella ellisii BPI 878343
Melanconiella spodiaea SPOD1
* Greeneria uvicola FI12008
Greeneria uvicola FI12007
93/--/1
* Tubakia seoraksanensis CBS 127490
99/97/0.9 Tubakia seoraksanensis BJFCCC 14082415
* Dicarpella dryina ICMP 14043
Dicarpella dryina ICMP 14042
--/99/1
* Tubakia thailandensis MFLUCC 17-1672
Tubakia thailandensis MFLUCC 12-0303
100/--/0.9 Greeneria saprophytica MFLUCC 12-0298
Melanconiellaceae (10)
76/--/0.9
Auratiopycnidiella tristaniopsis CBS 132180
Auratiopycnidiellaceae (11)
Pseudoplagiostoma oldii CBS 115722
100/81/1 Pseudoplagiostoma oldii CBS 124808
97/90/-- Pseudoplagiostoma eucalypti CBS 124807
99/97/0.9 Pseudoplagiostoma eucalypti CPC 14161
* Pseudoplagiostoma variabile CBS113067
Pseudoplagiostoma corymbiae CPC 19287
Pseudoplagiostomaceae (12)
78/--/0.9
100/84/-- Lasmenia sp. CBS 124123
Lasmenia sp. CBS 124125
100/96/1 Lasmenia sp. CBS 124124
100/68/1 Lasmenia sp. CBS 124122
* Apoharknessia insueta CBS 114575
Apoharknessia insueta CBS 111377
Apoharknessiaceae (13)


*
Diaporthe eres MFLUCC 14-0862
Diaporthe eres MFLUCC 17-1661
99/94/---
Diaporthe eres MFLUCC 17-1667
Diaporthe eres MFLUCC 17-1668
*
Diaporthe eres PS57
Diaporthe eres AR 5193
64/100/0.9
*
Diaporthe litoricola MFLUCC 16-1195
73/71/0.9
Diaporthe litoricola MFLUCC 17-1657
Diaporthe maytenicola CBS 136441
Diaporthe decedens CBS 114281
Diaporthe nobilis Napa911
83/62/0.9
Diaporthe rudis MFLUCC 16-1197
Diaporthe rudis MFLUCC 17-1658
Diaporthe rudis CBS 113201
--/--/1
Diaporthe rudis MFLU 17-0894
Diaporthe rudis IT 1526
79/--/0.9
98/100/1
Diaporthe rudis BPI 748231
Diaporthe rudis AR 3422
*
Diaporthe cynaroidis 150e
Diaporthe cynaroidis CBS 122676
Diaporthe cassines CBS 136440
Diaporthe eucalyptorum MFLUCC 12-0306
60/--/--
93/90/0.9
Stenocarpella maydis CBS 117559
Stenocarpella macrospora CBS 117560
Pustulomyces bambusicola MFLUCC 11-0436
89/92/0.9
*
Phaeocytostroma ambiguum CPC 17077
86/90/0.9
Phaeocytostroma ambiguum CPC 17078
60/67/--
*
Paradiaporthe artemisiae MFLUCC 14-0850
Paradiaporthe artemisiae MFLUCC 17-1663
*
Chiangraiomyces bauhiniae MFLUCC 17-1669
89/88/1
Chiangraiomyces bauhiniae MFLUCC 17-1670
97/60/0.9
Ophiodiaporthe cyathea YMJ1364
Diaporthe azadirachtae TN 01
100/98/0.9
Mazzantia napelli AFTOL-ID 2126
86/91/0.9
97/85/0.9
Mazzantia napelli AR3498
100/98/1
Chaetoconis polygoni MFLU 17–0965
Chaetoconis polygoni CBS 405.95
*
Hyaliappendispora galii MFLUCC 16-1208
84/--/0.9
84/87/0.9
Hyaliappendispora galii MFLU 17-0888
*
Phaeodiaporthe appendiculata CBS123821
Phaeodiaporthe appendiculata CBS 123809
Diaporthaceae (14)
*
Macrohilum eucalypti CPC 10945
Macrohilum eucalypti CPC 19421
Macrohilaceae (15)
*
Cytospora junipericola MFLU 17-0882
90/95/0.9
Cytospora junipericola BBH42444
Cytospora quercicola MFLU 17-0881
*
Cytospora quercicola BBH42443
75/61/--
Cytospora cedri CBS 196.50
99/98/0.9
Cytospora fraxinigena BBH42442
100/75/1
Cytospora fraxinigena MFLUCC 17-0880
91/96/0.9
Cytospora rosae MFLUCC 17-1664
99/91/1
Cytospora rosae MFLUCC 14-0845
*
Cytospora sacculus CFCC89625
97/92/1
Cytospora ceratosperma AR3426
Cytospora austromontana Willow21
94/81/0.9
Cytospora sp CMON41
68/--/0.9
Cytospora translucens CZ320
98/91/1
Valsella salicis AR 3514
85/--/1
Cytospora nivea CFCC 89643
Valseutypella multicollis CBS 105.89
Cytosporaceae (16)


65/--/--
Cytospora chrysosperma CFCC89630
76/89/-
Cytospora sordida HMBF159
70/65/0.9
Cytospora melnikii IT 851
83/73/0.9
Cytospora salicina MFLUCC 16-1190
Cytospora salicina MFLUCC 16-0637
Cytospora ambiens ATCC 52280
87/51/--
Cytospora malicola SXFX V2
60/51/--
Cytospora germanica CXY217
86/98/1
Cytospora carbonacea CFC 50056
82/91/0.9
Cytospora ribis CFCC 50027
65/--/1
Cytospora hippophaes CFCC 89640
*
Cytospora melanodiscus Worrall2b
60/--/0.9
Cytospora melanodiscus Jimslanding2
Cytospora mali CFCC 50044
Cytosporaceae cont'd.
85/--/0.9
Cytospora centravillosa MFLUCC 16-1206
*
Cytospora centravillosa MFLU 17-0887
86/--/1
Cytospora centravillosa MFLUCC 17-1660
Cytospora punicae CBS 199.50
52/--/1
88/51/1
Waydora typica PDD 103894
"Leucostoma kunzei" ATCC64881
Pachytrype rimosa FF1066
94/89/0.9
Pachytrype princeps Rogers S
*
Prosopidicola mexicana CBS 113530
Prosopidicola mexicana CBS 113529
Prosopidicolaceae (17)
*
Phaeoappendispora thailandensis MFLU 12-2131
Diaporthales genera
Phaeoappendispora thailandensis MFLUCC 13-0161
Incertae sedis (18)
100/94/1
Stilbospora ellipsosporum WJ 1840
86/65/0.9
Stilbospora macrosperma CBS 121883
*
Crinitospora pulchra CBS 138014
Stilbosporaceae (19)
Stegonsporium acerophilum CBS 117025
100/96/1
Coryneum arausiaca MFLUCC 13-0658
95/60/0.9
Coryneum arausiaca MFLUCC 15-1110
97/84/0.9
Coryneum longipes AR 3541
99/98/1
Coryneum modonia AR 3558
Coryneaceae (20)
100/96/1
Coryneum umbonata AR 3897
*
Hapalocystis berkeleyi AR 3851
78/65/1
Hapalocystis berkeleyi MFLUCC 13-0662
Chapeckia nigrospora CBS 125532
100/99/1
Cainiella johansonii Kruys 731 UPS
Cainiella johansonii Kruys 727 UPS
Rossmania ukurunduensis AR 3484
*
Sillia ferruginea CBS 126567
98/79/1
Sillia ferruginea AR 3440
Sydowiellaceae (21)
Sydowiella fenestrans CBS 125530
75/65/--
Sydowiella depressula CBS 813.79
98/70/0.9
Sydowiella urticicola MFLUCC 13-0665
82/92/0.9
Sydowiella urticicola MFLUCC 17-1665
97/60/1
90/51/1
100/96/1
Lamproconium desmazieri MFLUCC 15-0870
96/52/0.9
Lamproconium desmazieri MFLUCC 14-1047
98/73/0.9
Lamproconium desmazieri MFLUCC 15-0872
Lamproconium desmazieri MFLUCC 15-0873
Lamproconiaceae (22)
*
Lamproconium desmazieri MFLUCC 15-0871
*
Lamproconium desmazieri AR 3525
61/--/0.9
Hercospora tiliae AR 3526
93/--/1
Asterosporium asterospermum CBS 112404
85/--/--
Asterosporium asterospermum KT2101
100/96/1
Asterosporium asterospermum KT2125
Asterosporiaceae (23)
Asterosporium asterospermum KT2138
Asterosporium asterospermum MFLU 15-3555


100/94/1
Phaeoacremonium vibratile CBS 117115
65/--/--
Phaeoacremonium aleophilum CBS 631.94
Togniniales
Calosphaeria pulchella CBS 115999
Calosphaeriales
×4
Hyalorostratum brunneisporum A573 2b
Diaporthomycetidae genera Incertae sedis
Lanspora coronata LCU46889
Phomatosporales
Ophiostoma gemellus CMW 23059
Ophiostomatales
Thyridium vestitum AFTOL-ID 172
Thyridiaceae
76/--/0.9
Myrmecridium montsegurinum JF 13180
Myrmecridiales
60/--/0.9
*
Ascolacicola austriaca CBS 102665
Ascitendus austriacus CBS 131685
Annulatascales
Brachysporium nigrum MR 1346
Trichosphaeriales
Papulosa amerospora AFTOL-ID 748
Papulosaceae
*
Pyricularia oryzae REA8401
--/100/0.9
Pyricularia bothriochloae CPC 21650
Magnaporthales
Sordaria fimicola CBS 508.50
Sordariales
Eutypella sp. MFLUCC 16-1215
outgroup
0.2

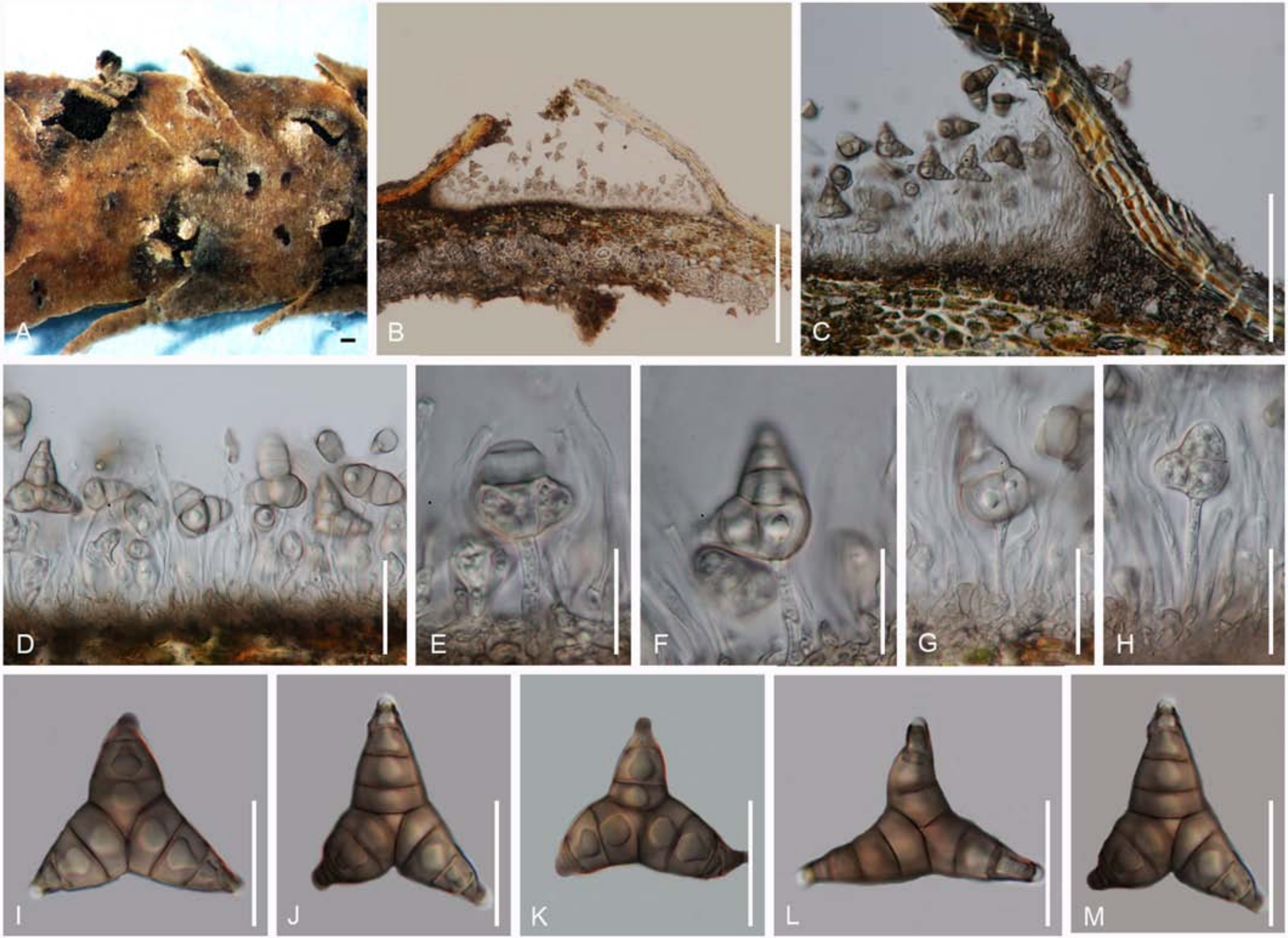
Kryptogamae exsiccatae. A. MUS. PALAT.
VINDOBON.

HERB. I.MI.
No. 11662.

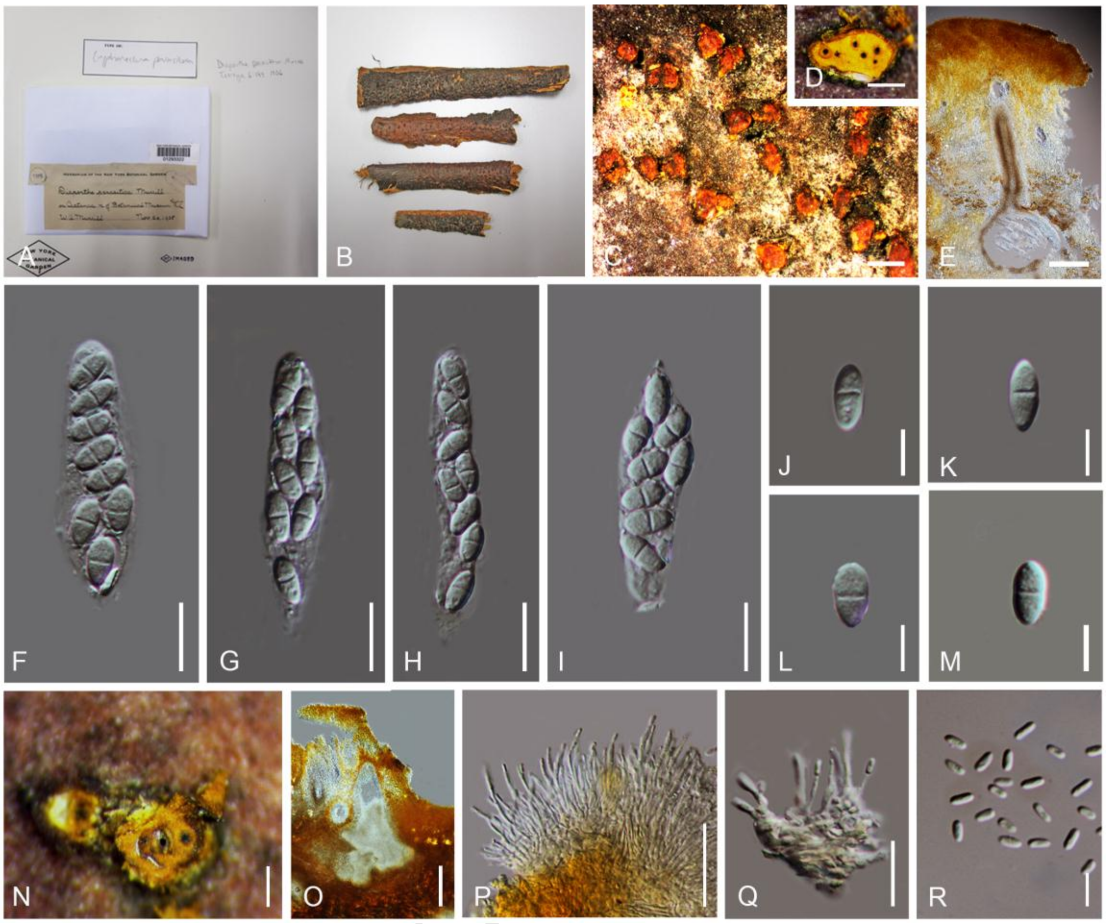
1313. Laestadia carpinea.

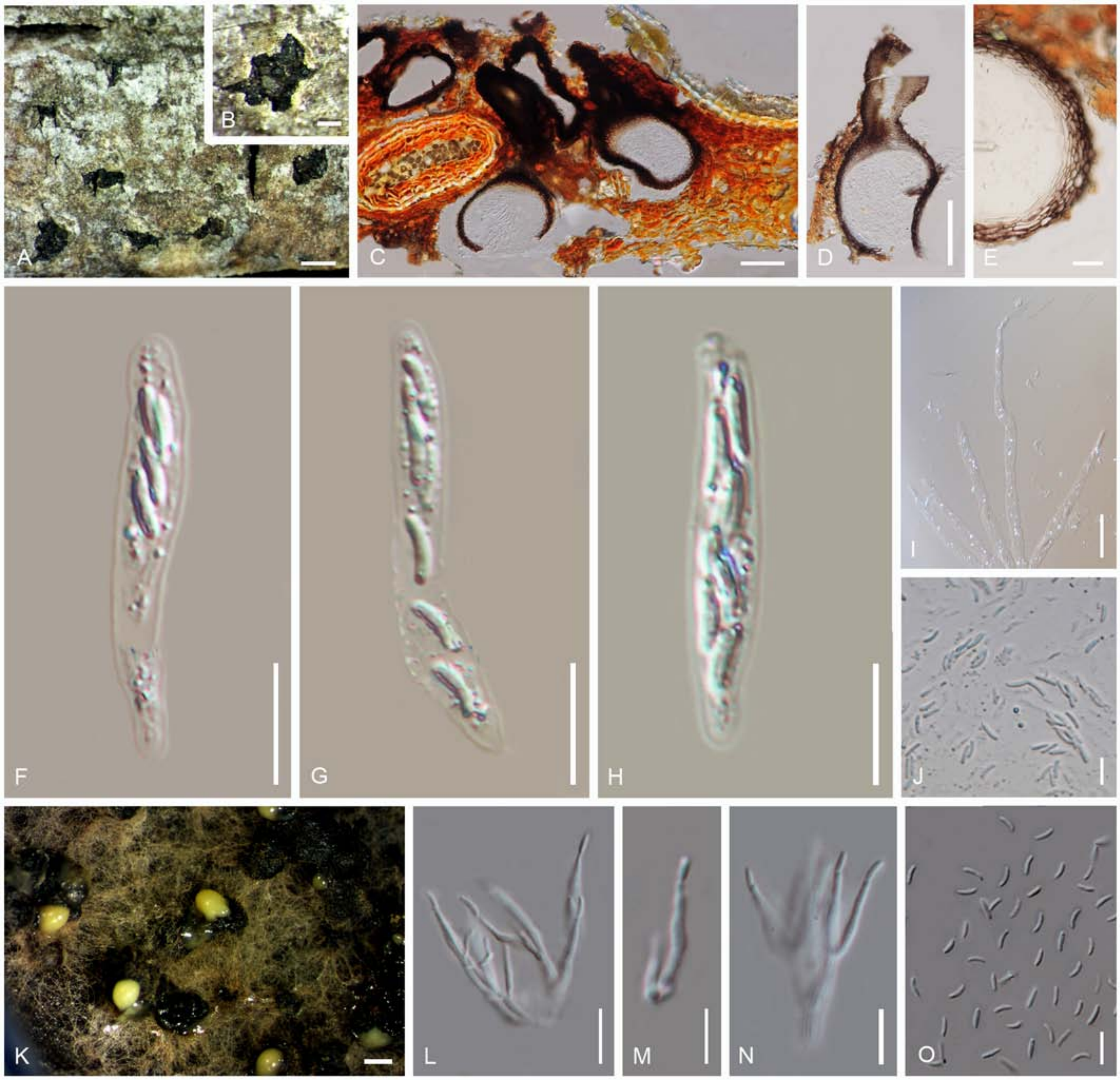
Sacc., Syll. fung., vol. I (1882), p. 426; Wint. apud Rabenh., Kryptfl. v. Deutschl., 2. Aufl., Bd. I, Abt. 2 (1887), p. 398. — *Sphaeria carpinea* Fries, Syst. mycol., vol. II (1823), p. 523. — *Ascospora carpinea* Fries, Summa veget. Scand., sect. poster. (1849), p. 425. — *Sphaerella carpinea* Auersw. apud Rabenh. et Gonnerm., Mycol. eur., Heft 9 (1870), p. 2, tab. 2, fig. 16.

Austria inferior: in foliis exaridis *Carpini betuli* L. in monte «Sonntagberg» prope Rosenau, m. Julio leg. P. P. Strasser.

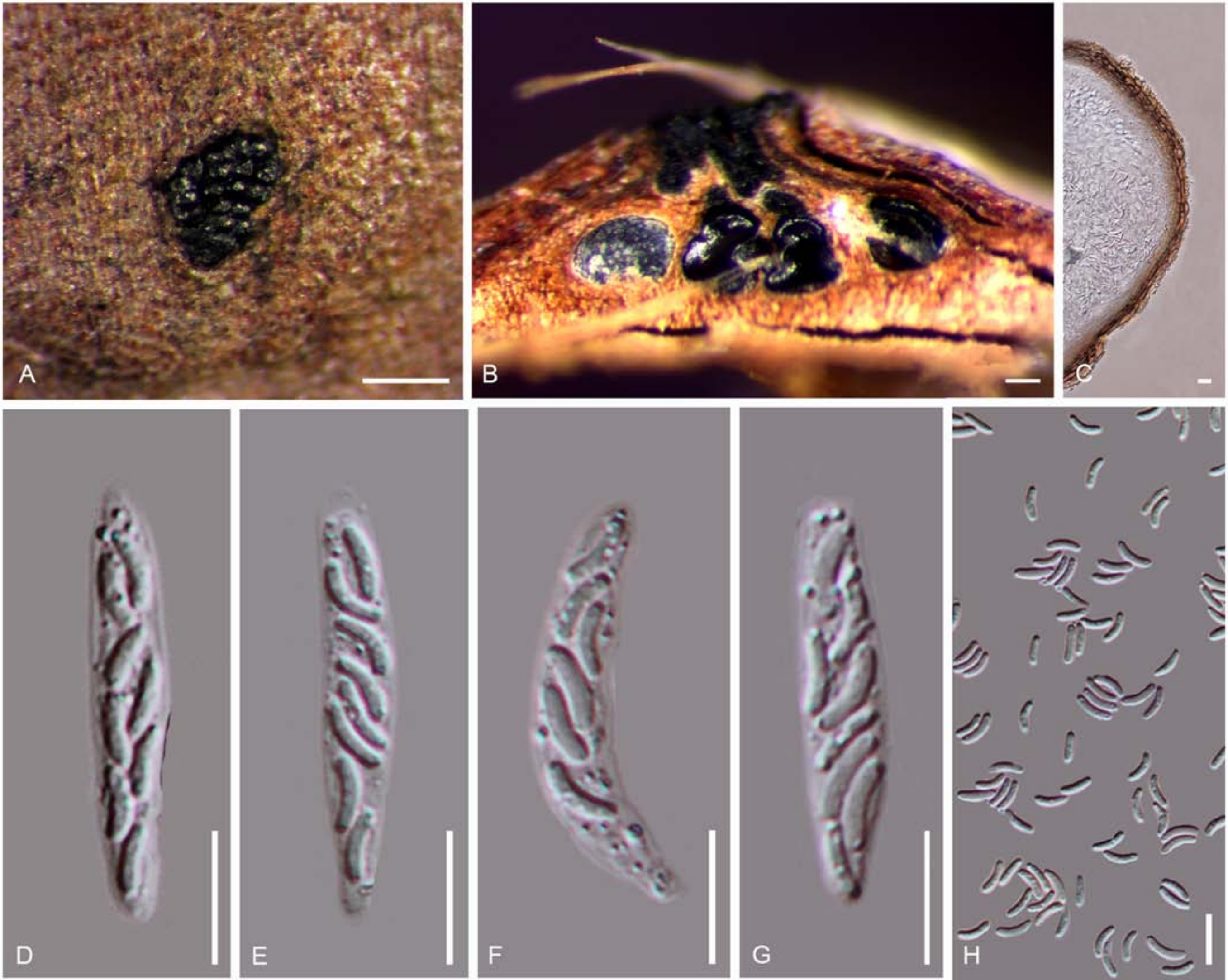

A
B
C
D
E
F
G
H
I
J
K
L
M


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
ZA
ZB

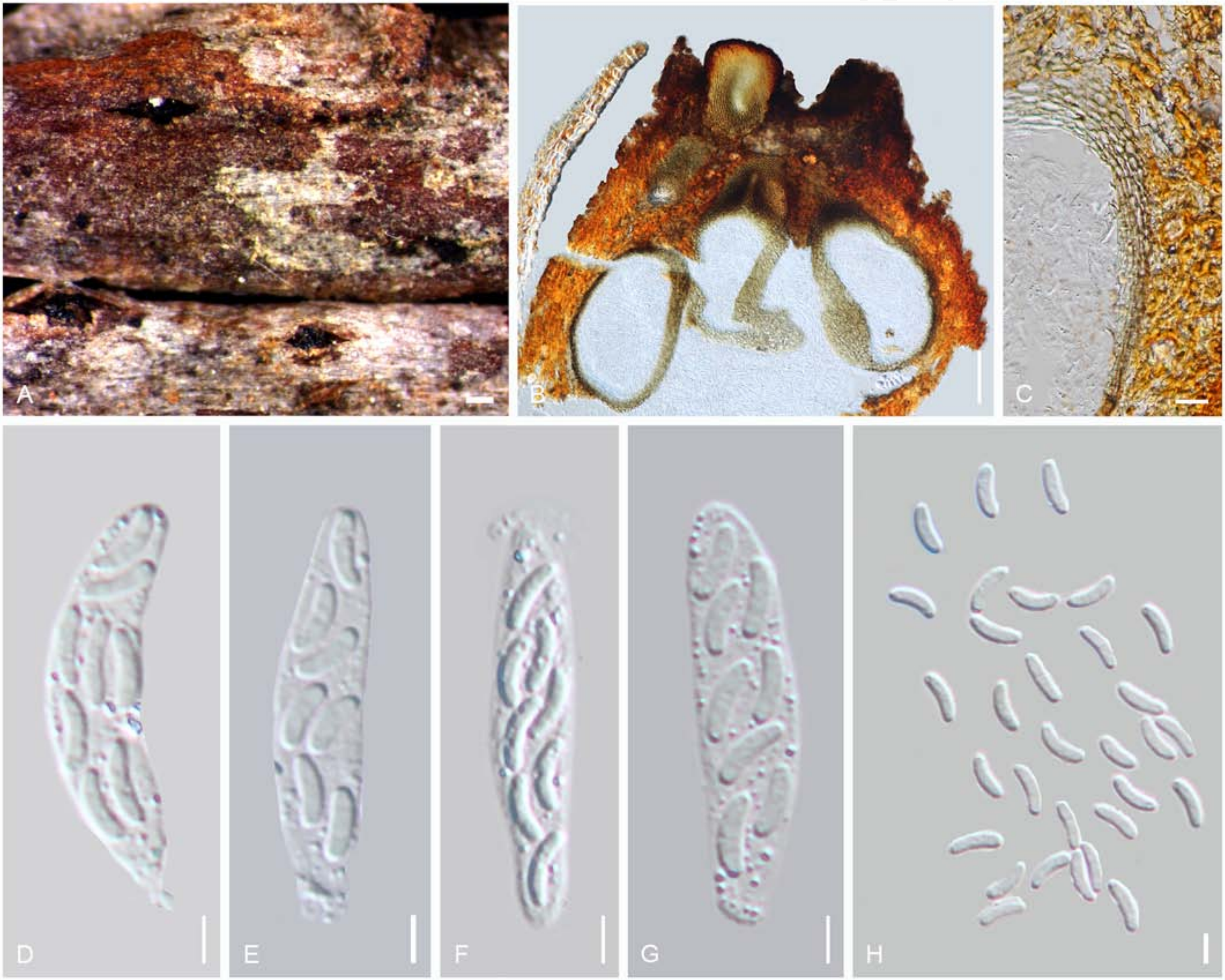

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

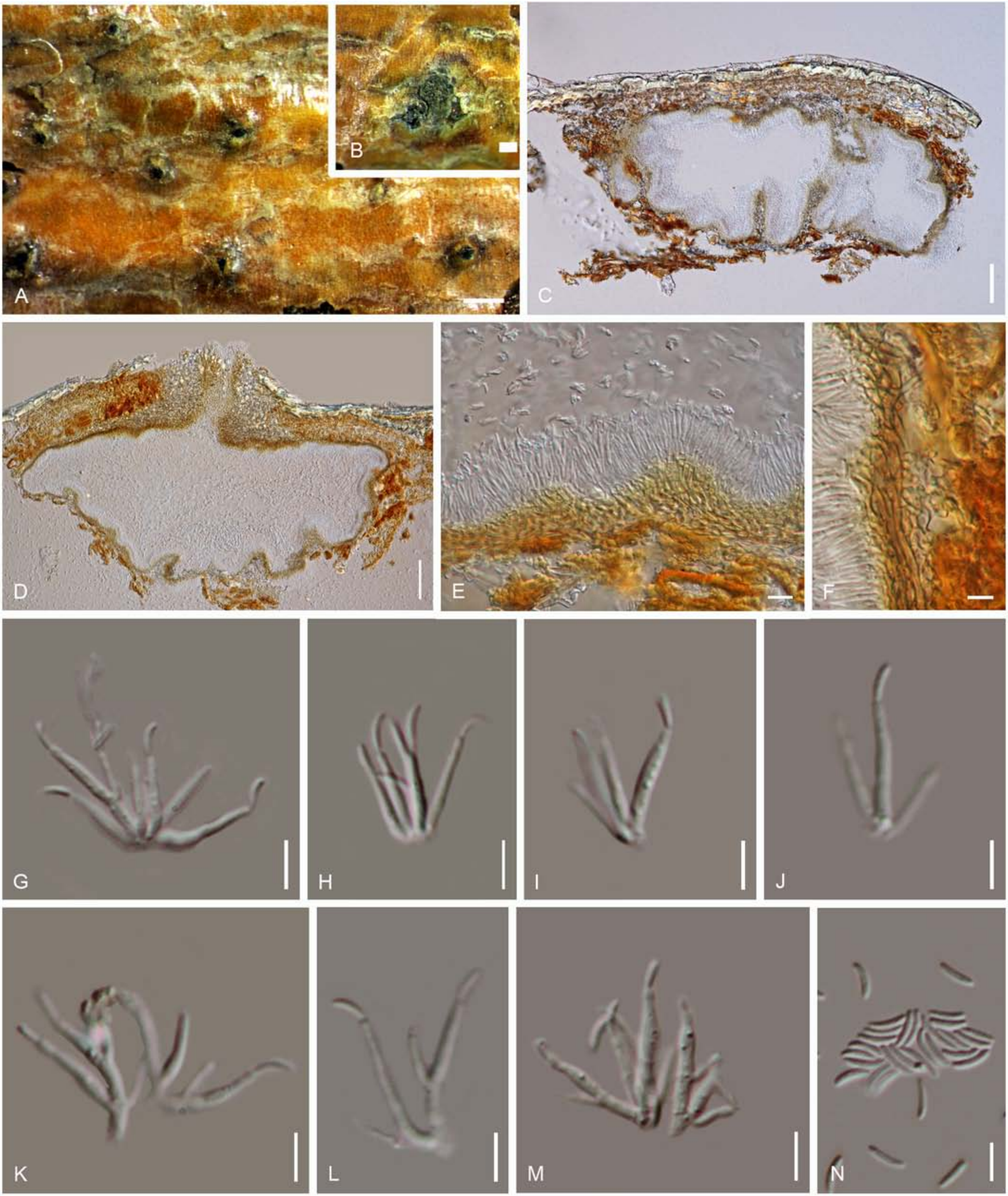

A
B
C
D
E
F
G
H
I
J

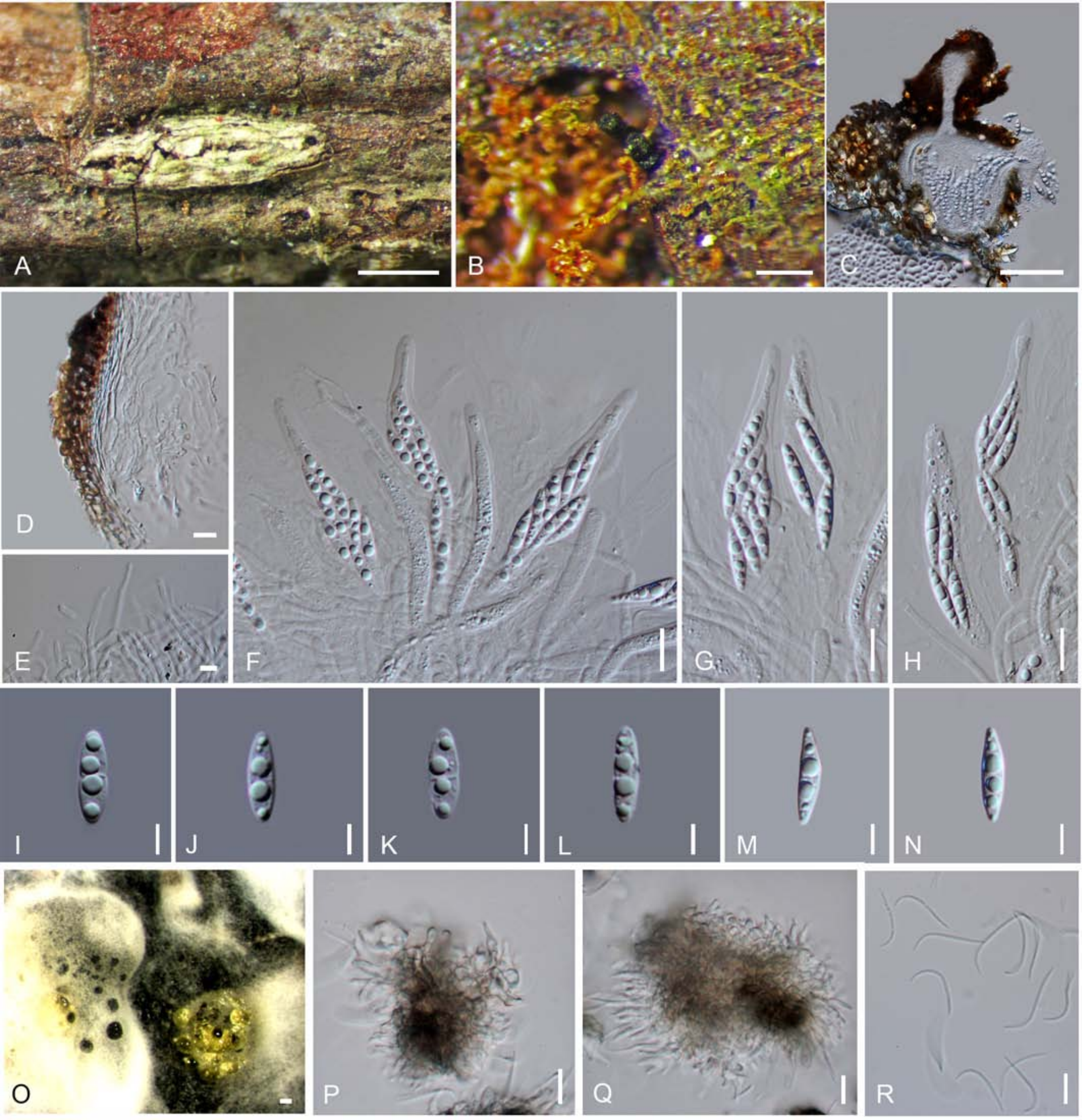


A
B
C
D
E
F
G
H


A
B
C
D
E
F
G
H

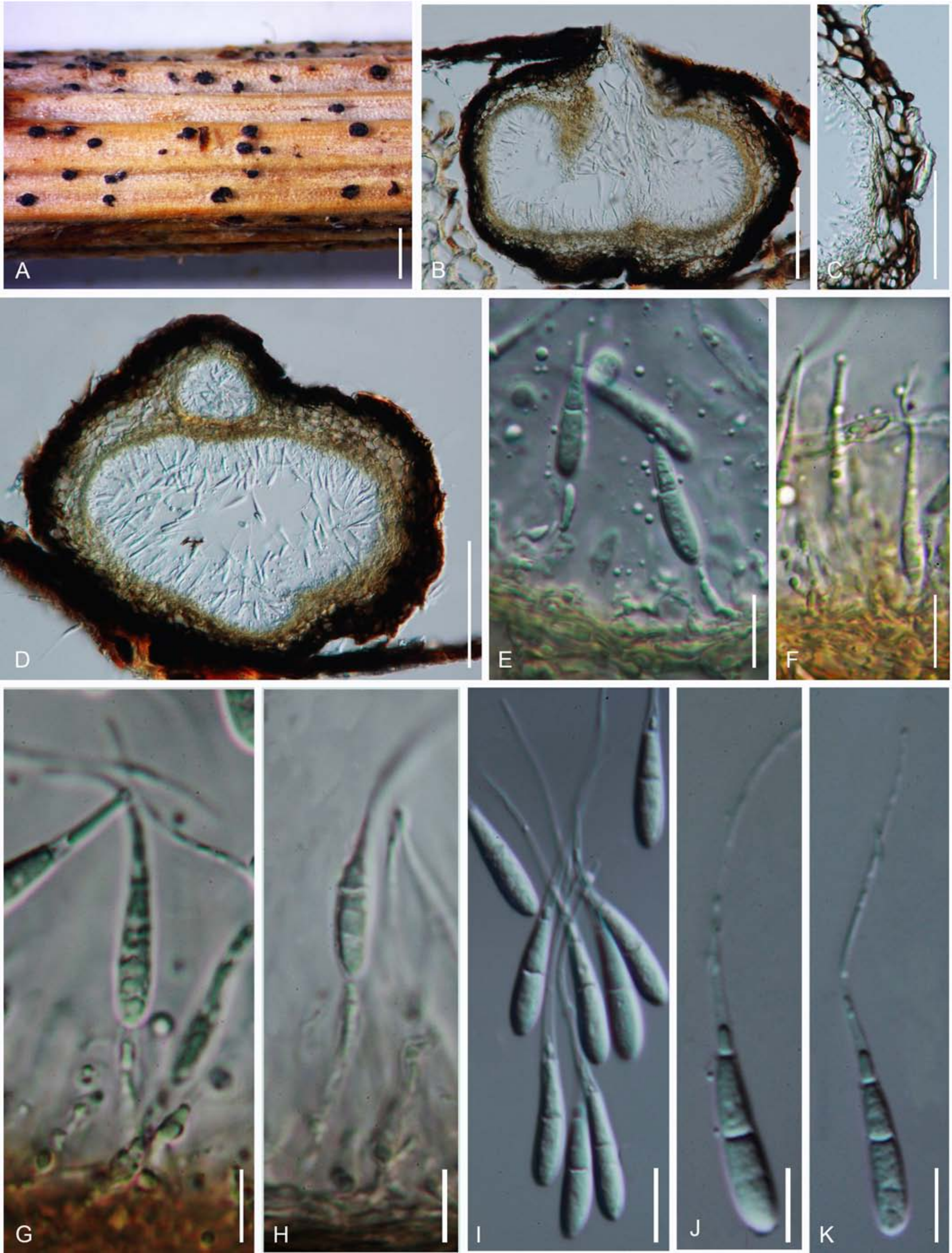

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
P
Q
R
S

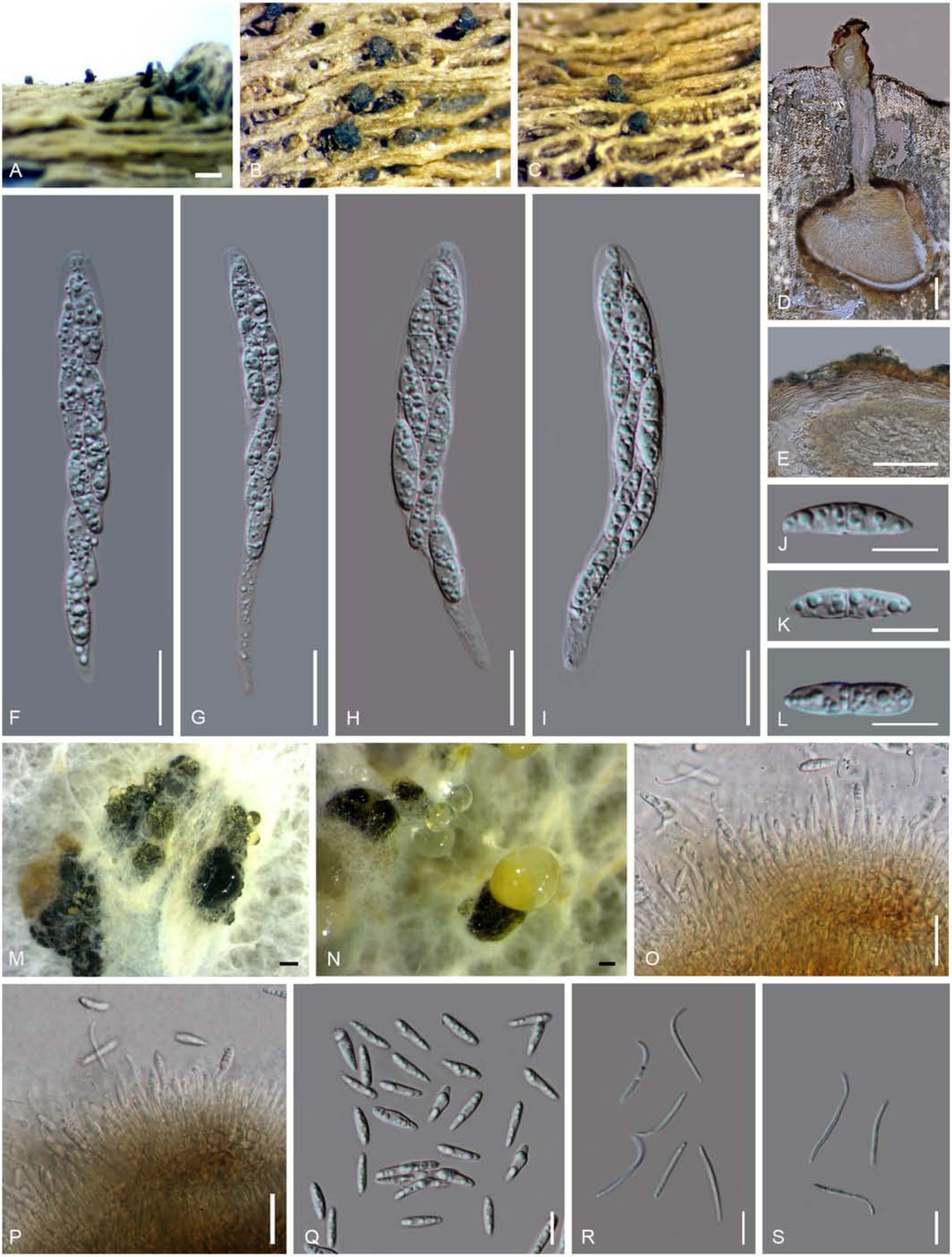

A
B
C
D
E
F
G
H
I
J
K
L
M
N

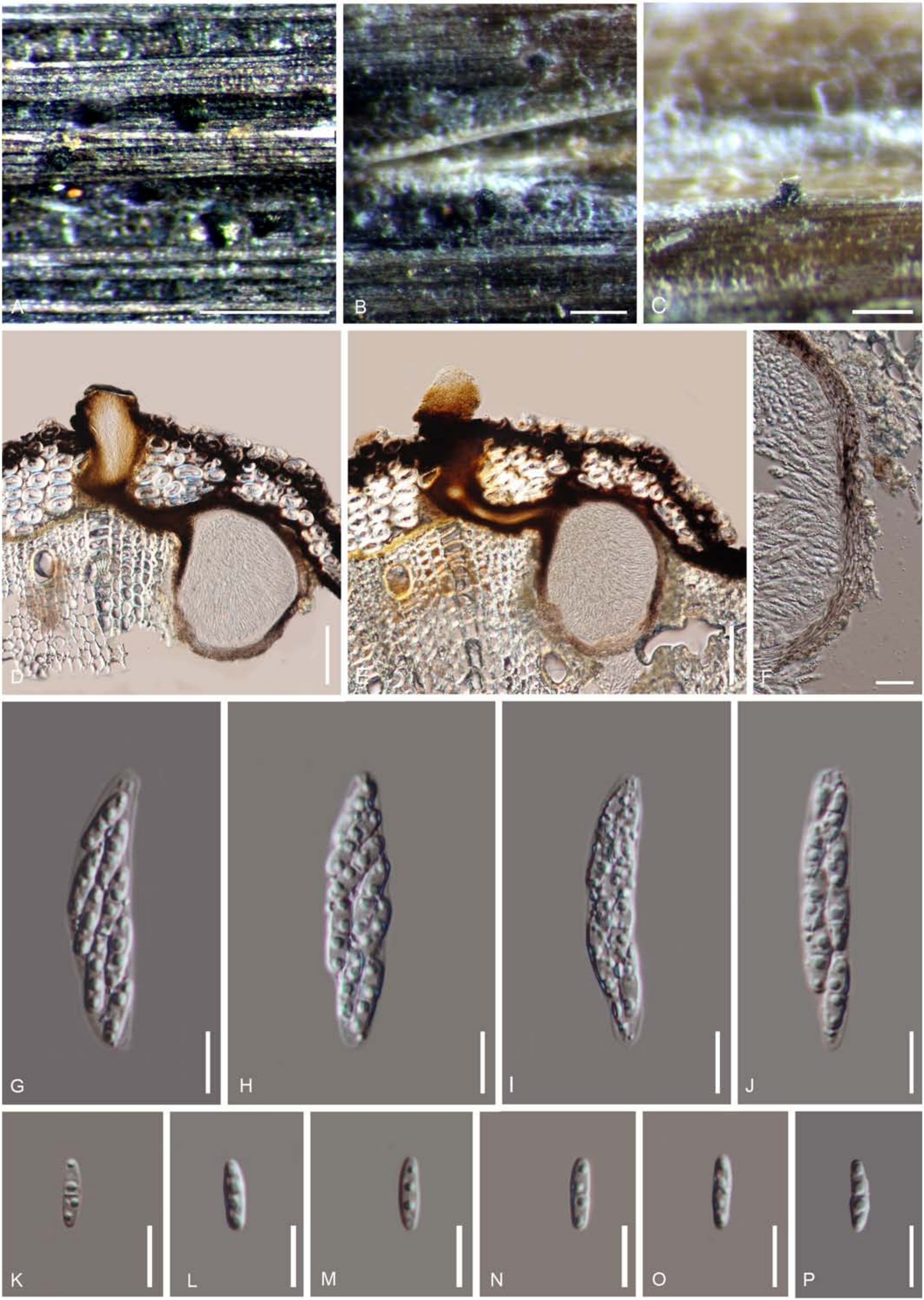

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R

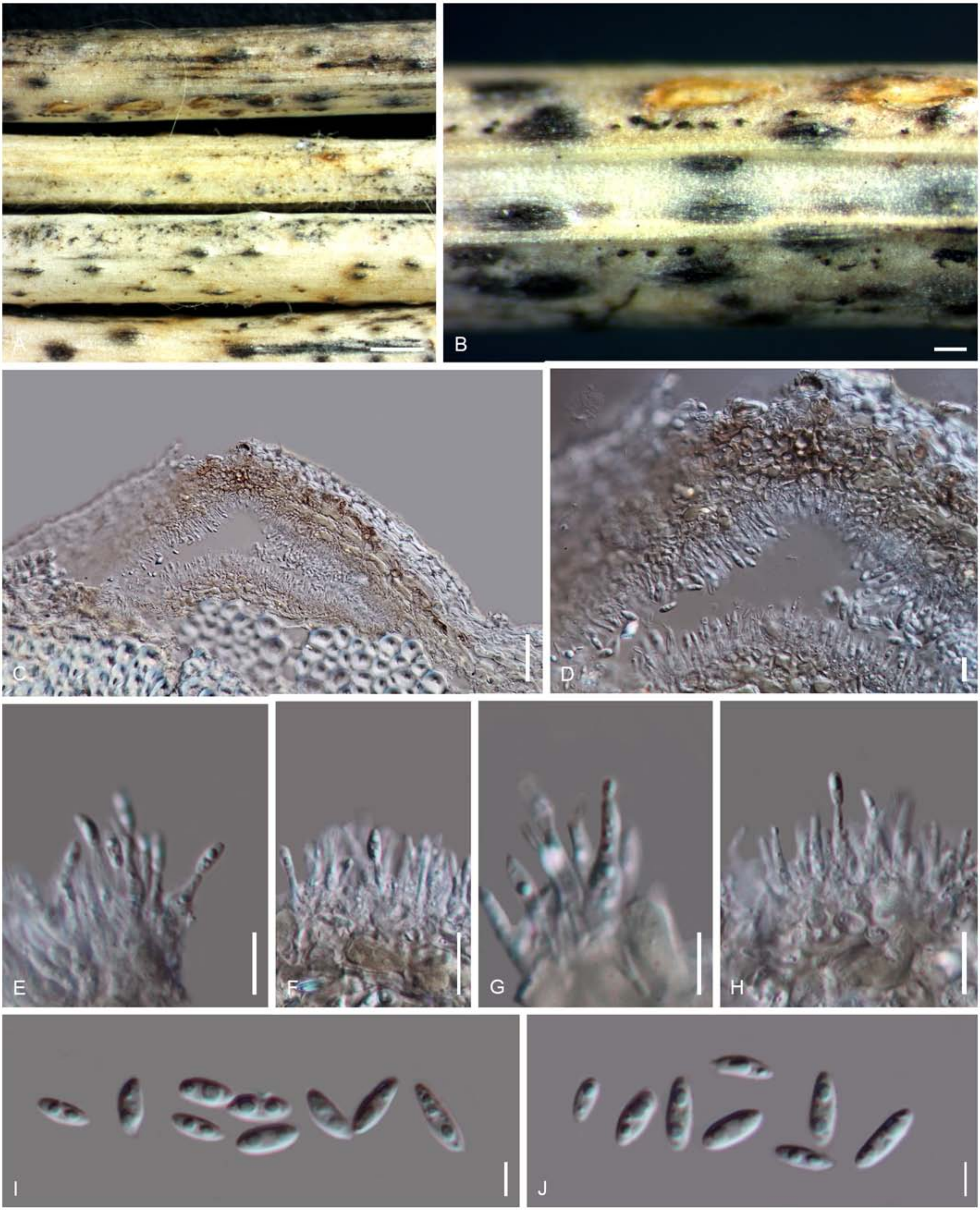

A
B
C
D
E
F
G
H
I
J
K
L

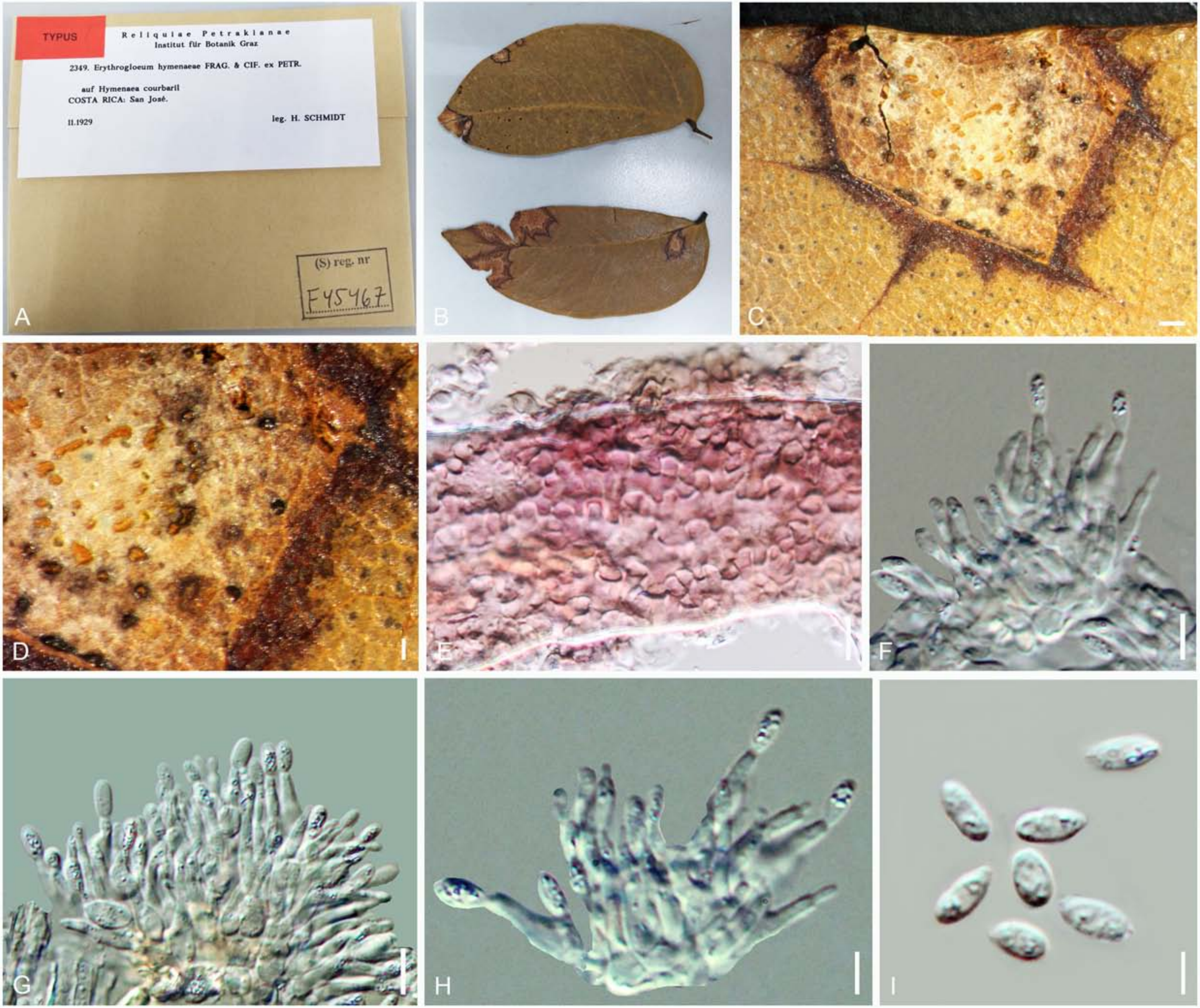

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T


A
B
C
D
E
F
G
H
I
J
K


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P


A
B
C
D
E
F
G
H
I
J



TYPUS

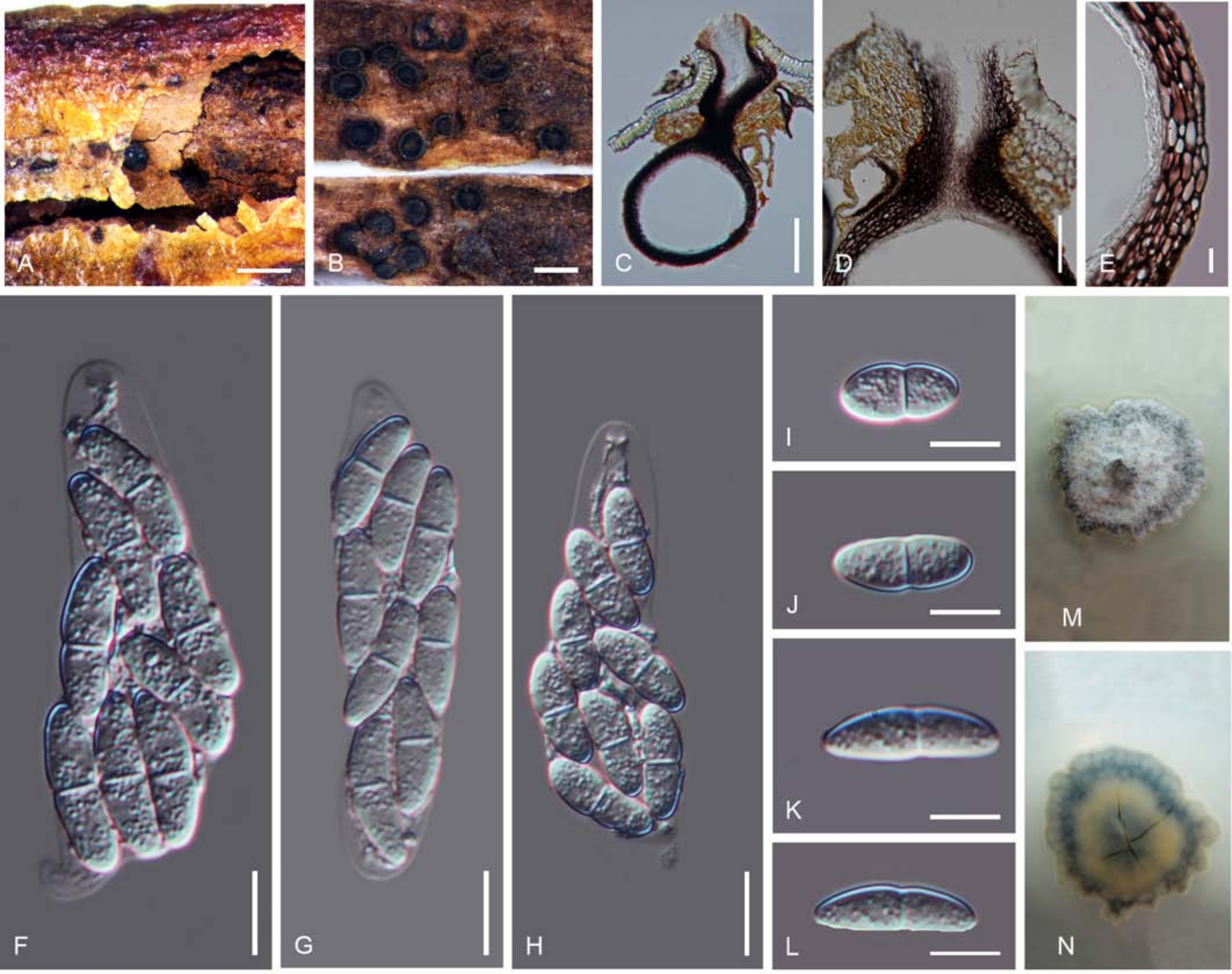
Reliquiae Petrakianae
Institut für Botanik Graz

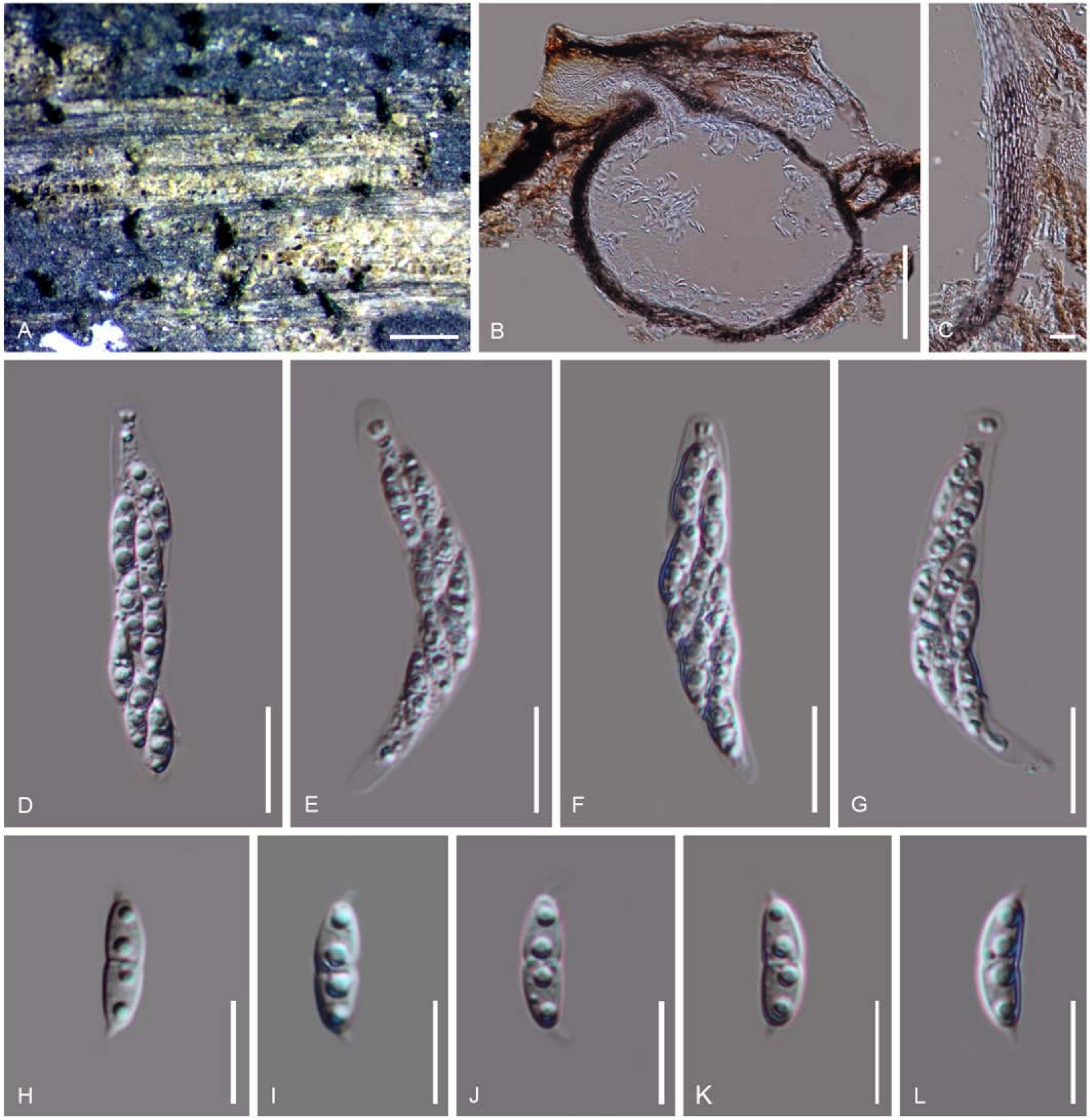
2349. Erythrogloeum hymenaeae FRAG. & CIF. ex PETR.

auf Hymenaea courbaril
COSTA RICA: San José.

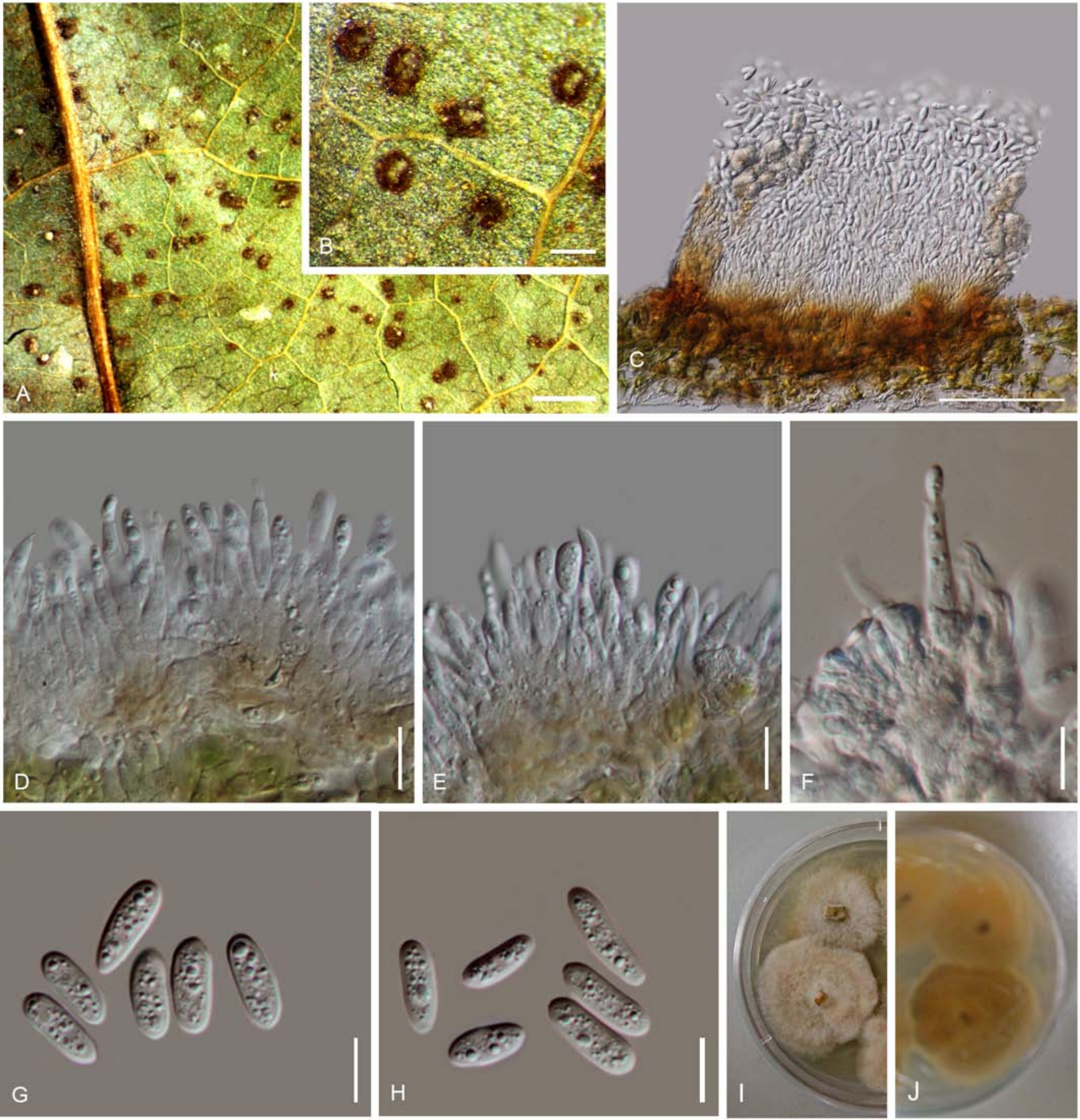
II.1929 leg. H. SCHMIDT

(S) reg. nr
F45467


A
B
C
D
E
F
G
H
I
J
K
L
M
N


A
B
C
D
E
F
G
H
I
J
K
L

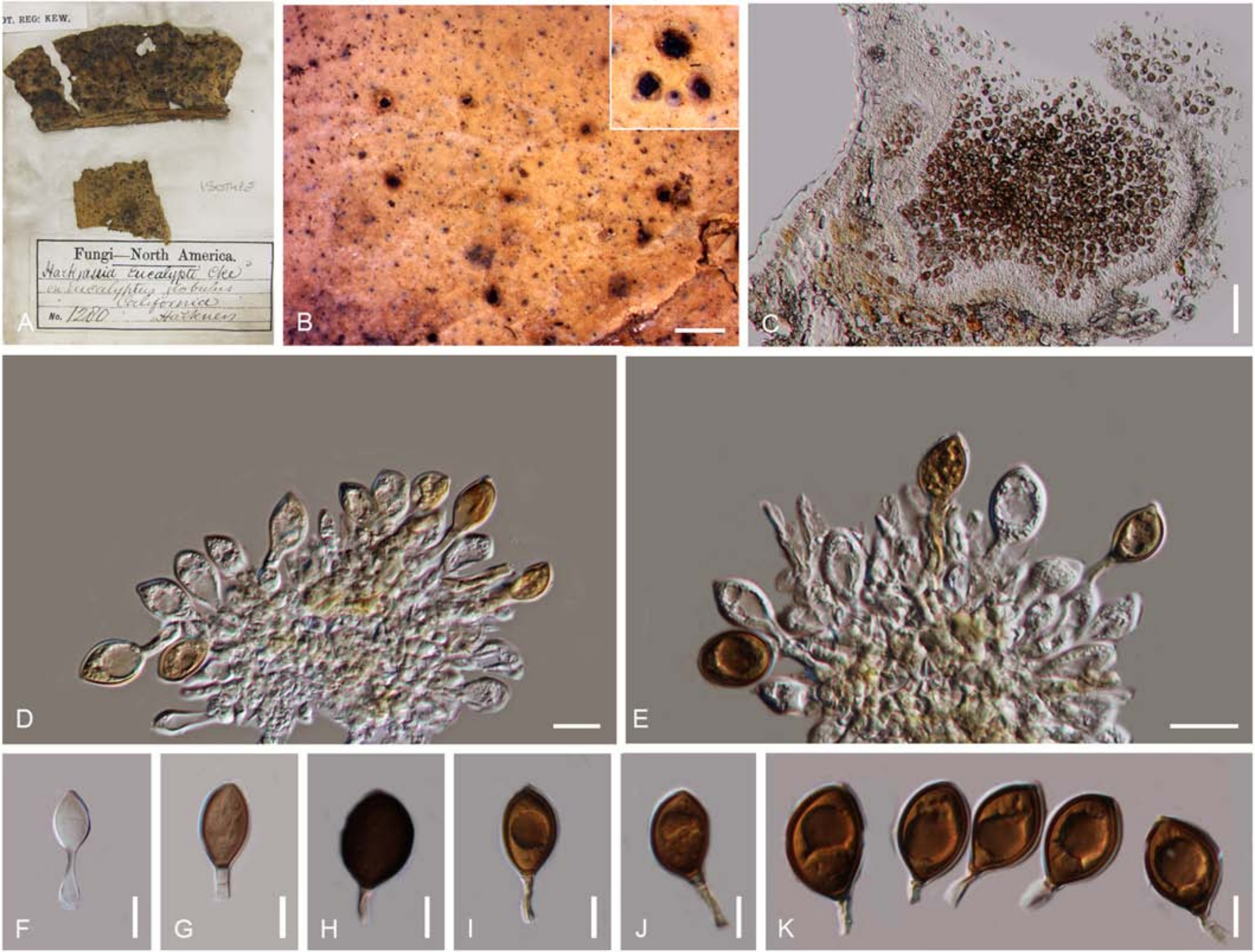

A
B
C
D
E
F
G
H
I
J

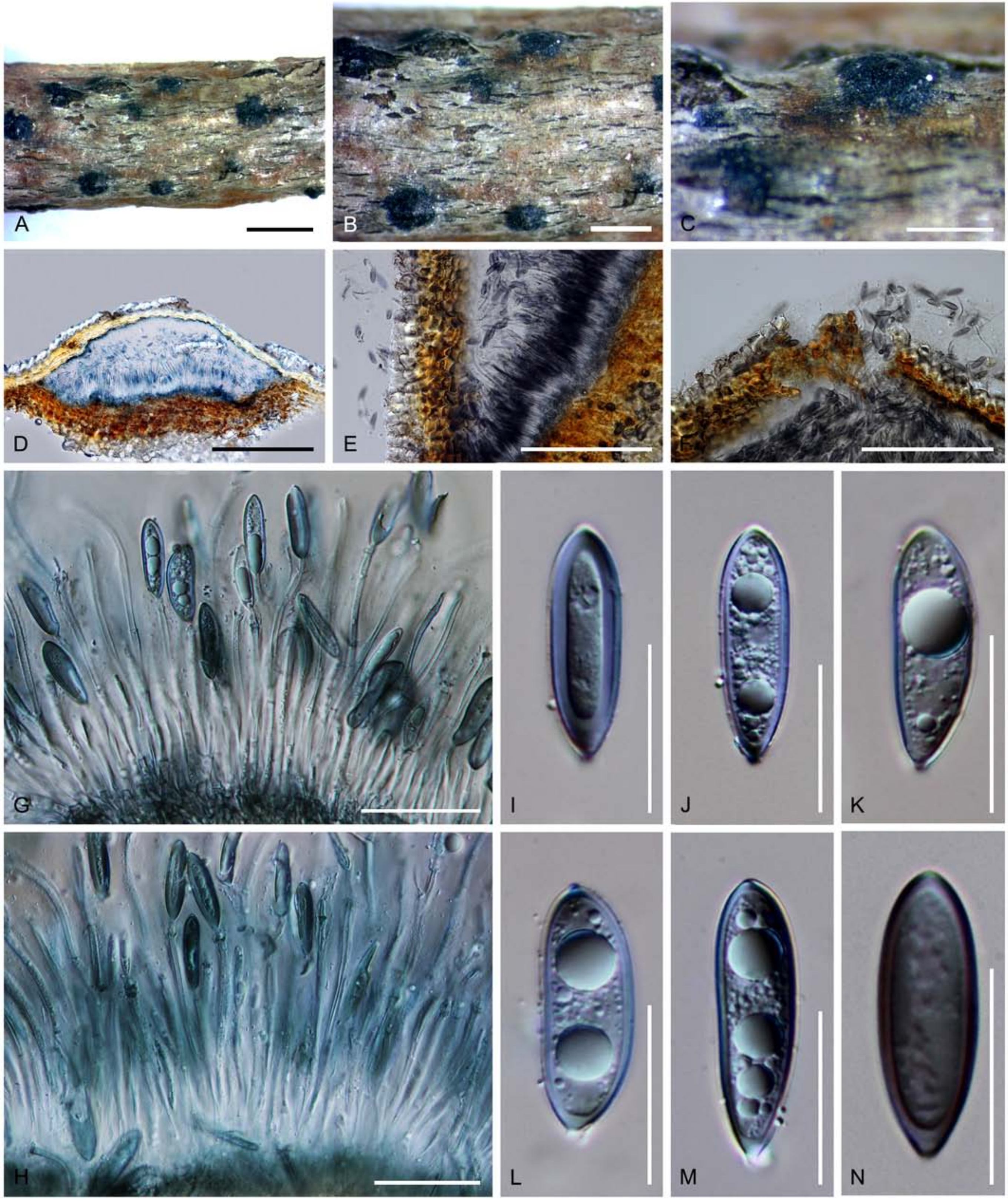

A
B
C
D
E
F
G
H
I
J

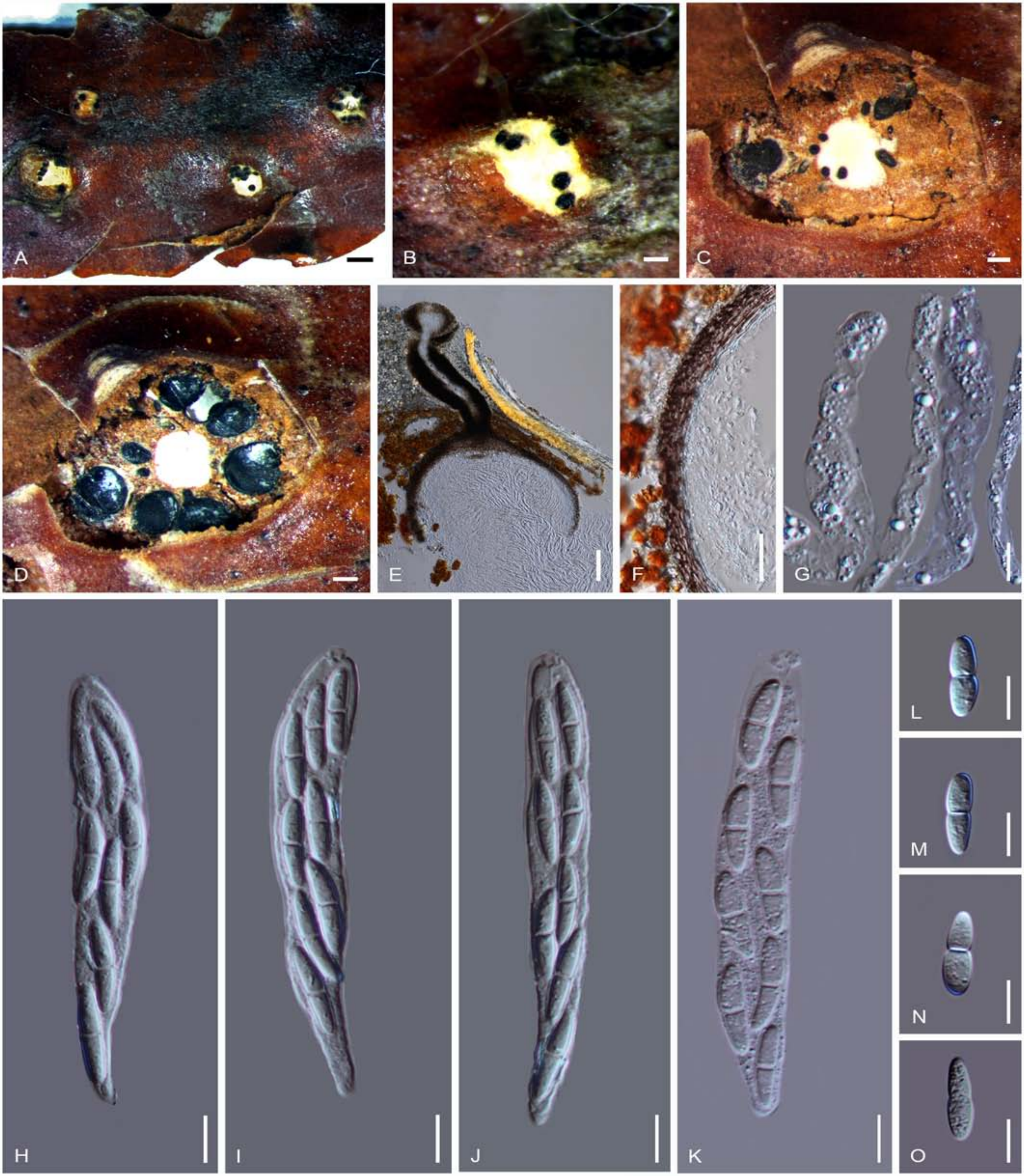

A
B
C
D
E
F
L
M
N
G
H
I
J
K

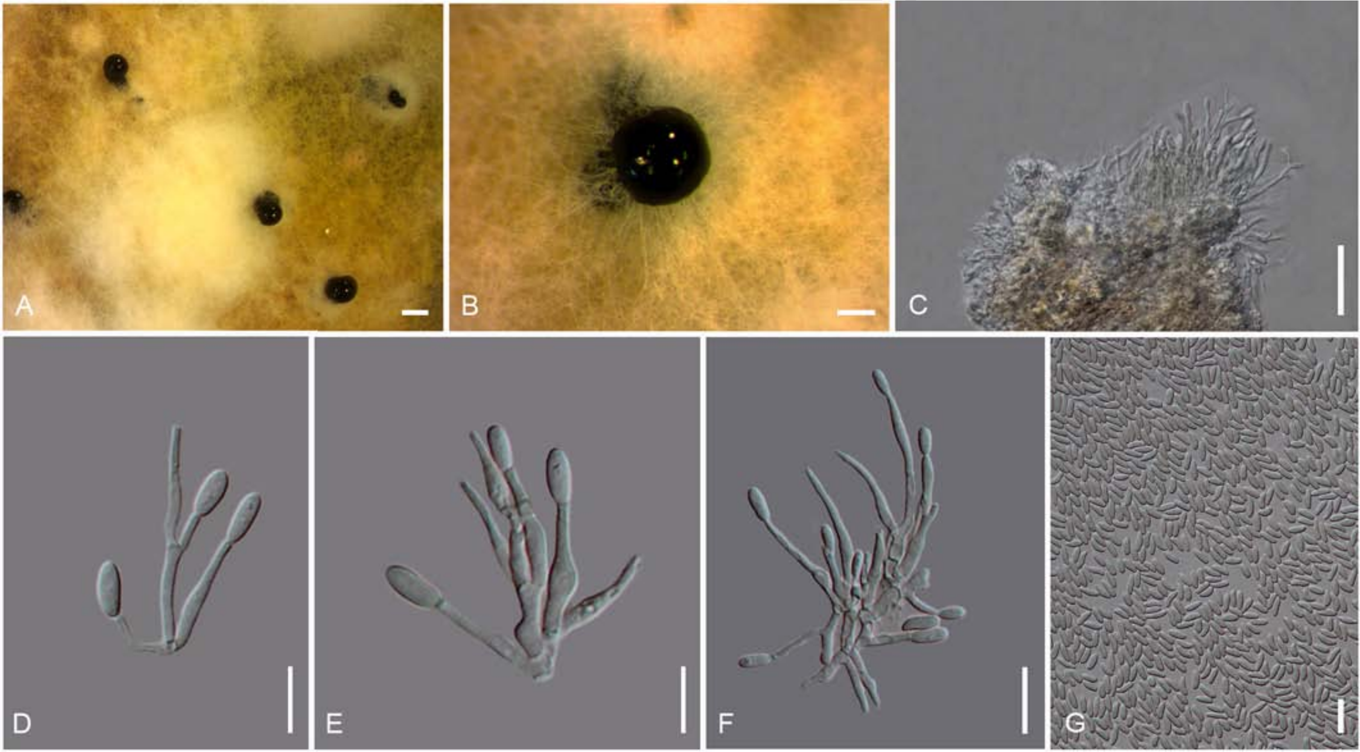

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

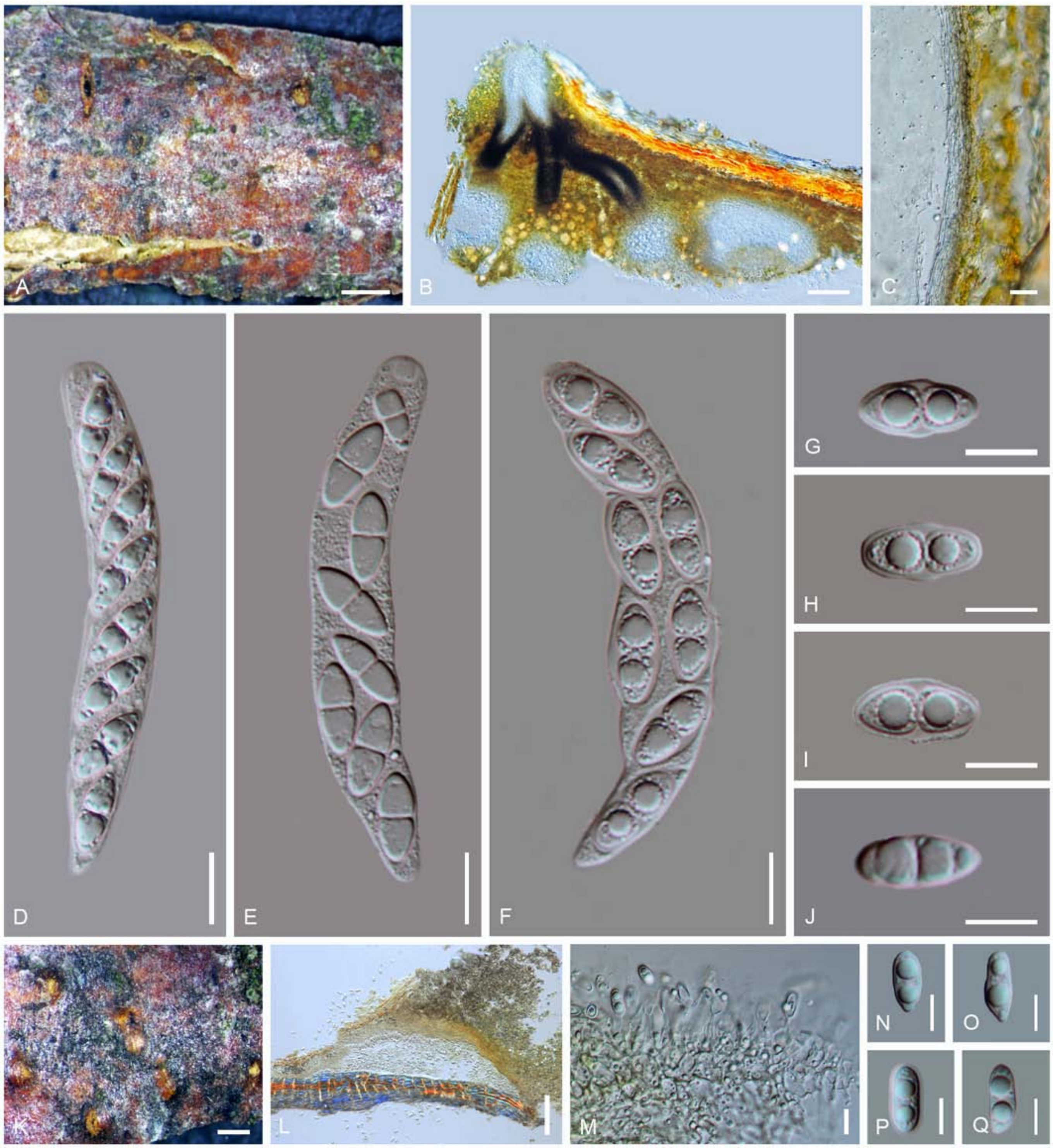

A
B
C
D
E
F
G
H
I
J
K
L
M

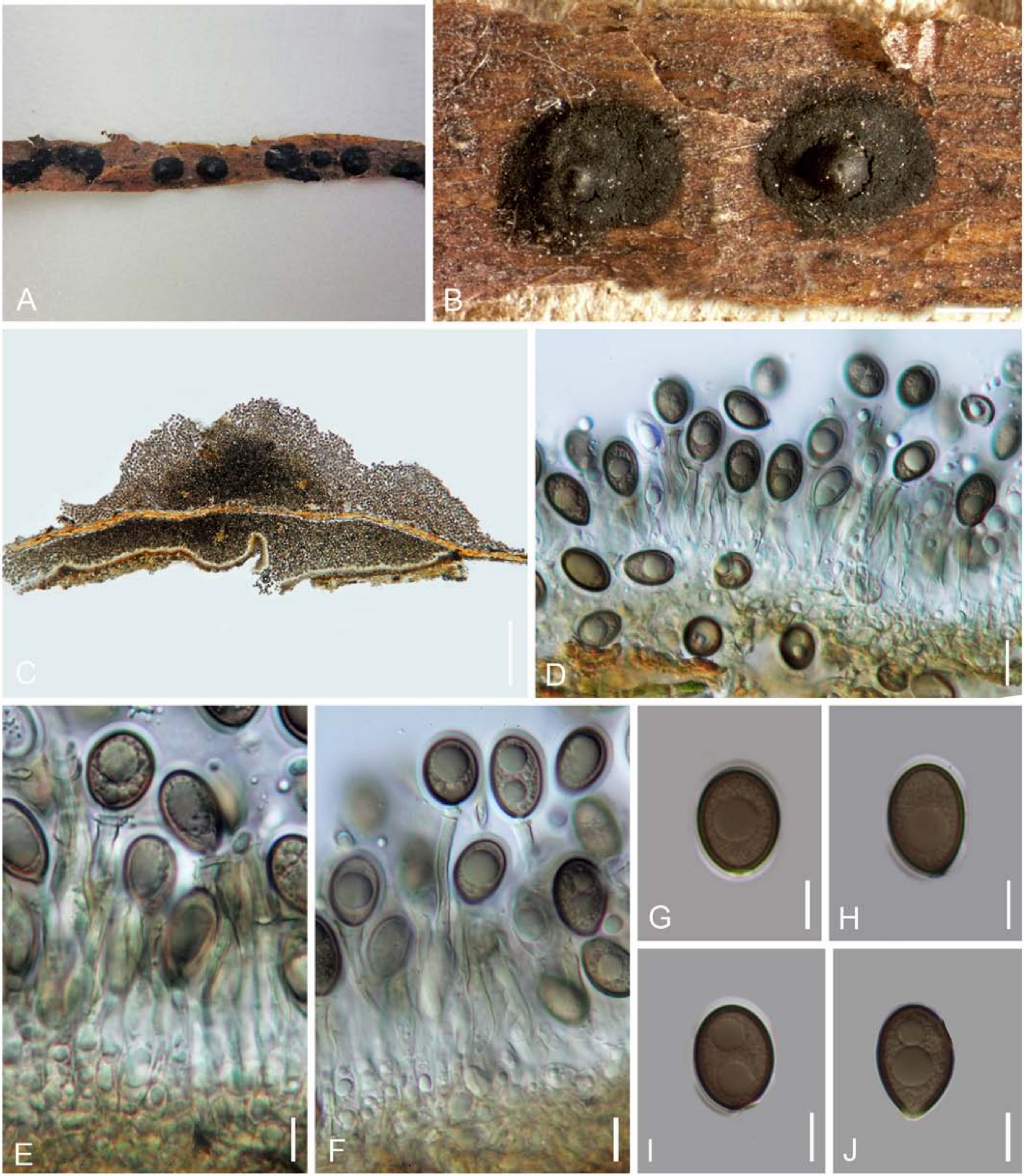

OT. REG: KEW.
Fungi—North America.
Harknessia Eucalypti Cke
on Eucalyptus globulus
California
No. 1280 Harkness
A
B
C
D
E
F
G
H
I
J
K

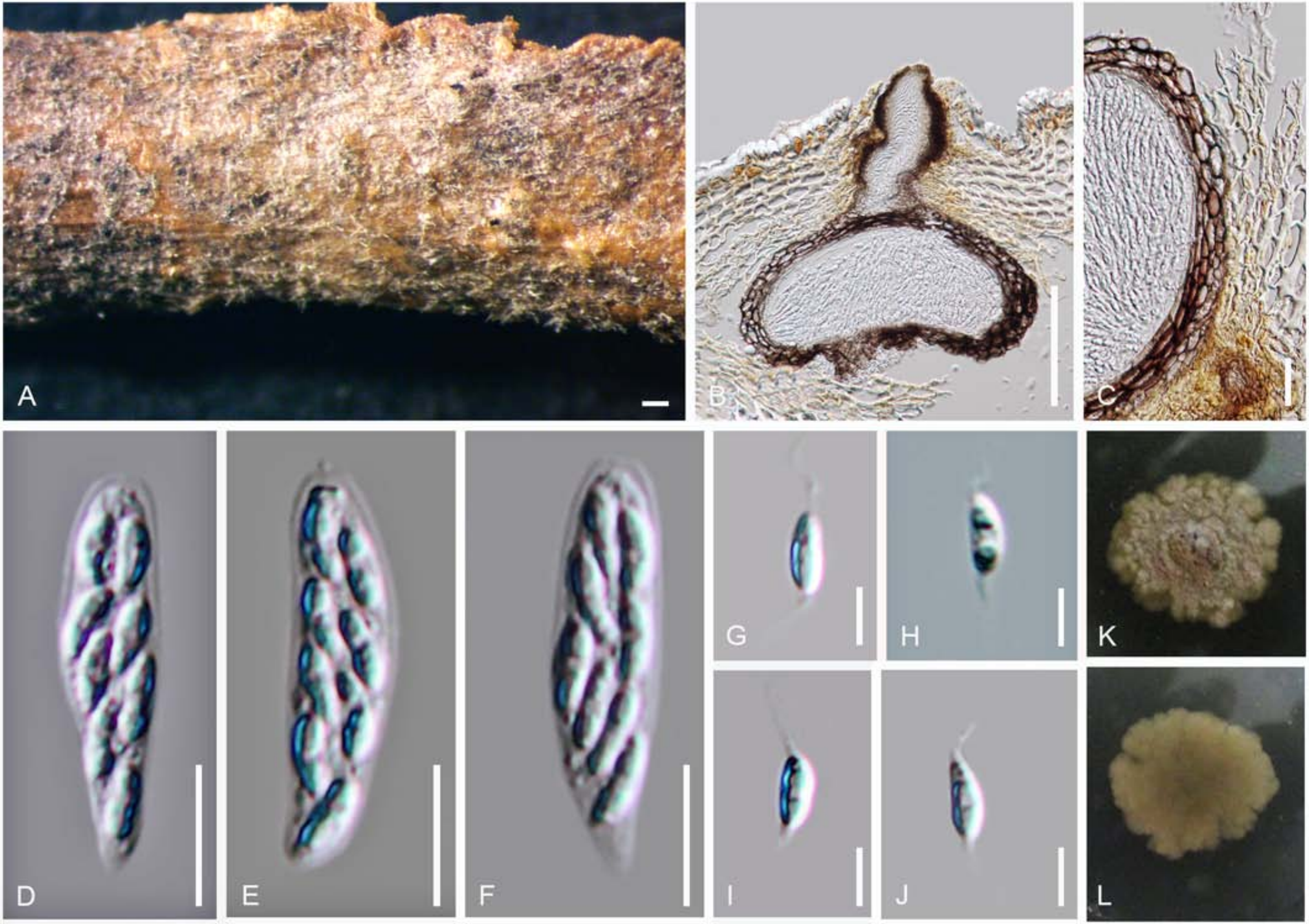

A
B
C
D
E
F
G
I
J
K
H
L
M
N

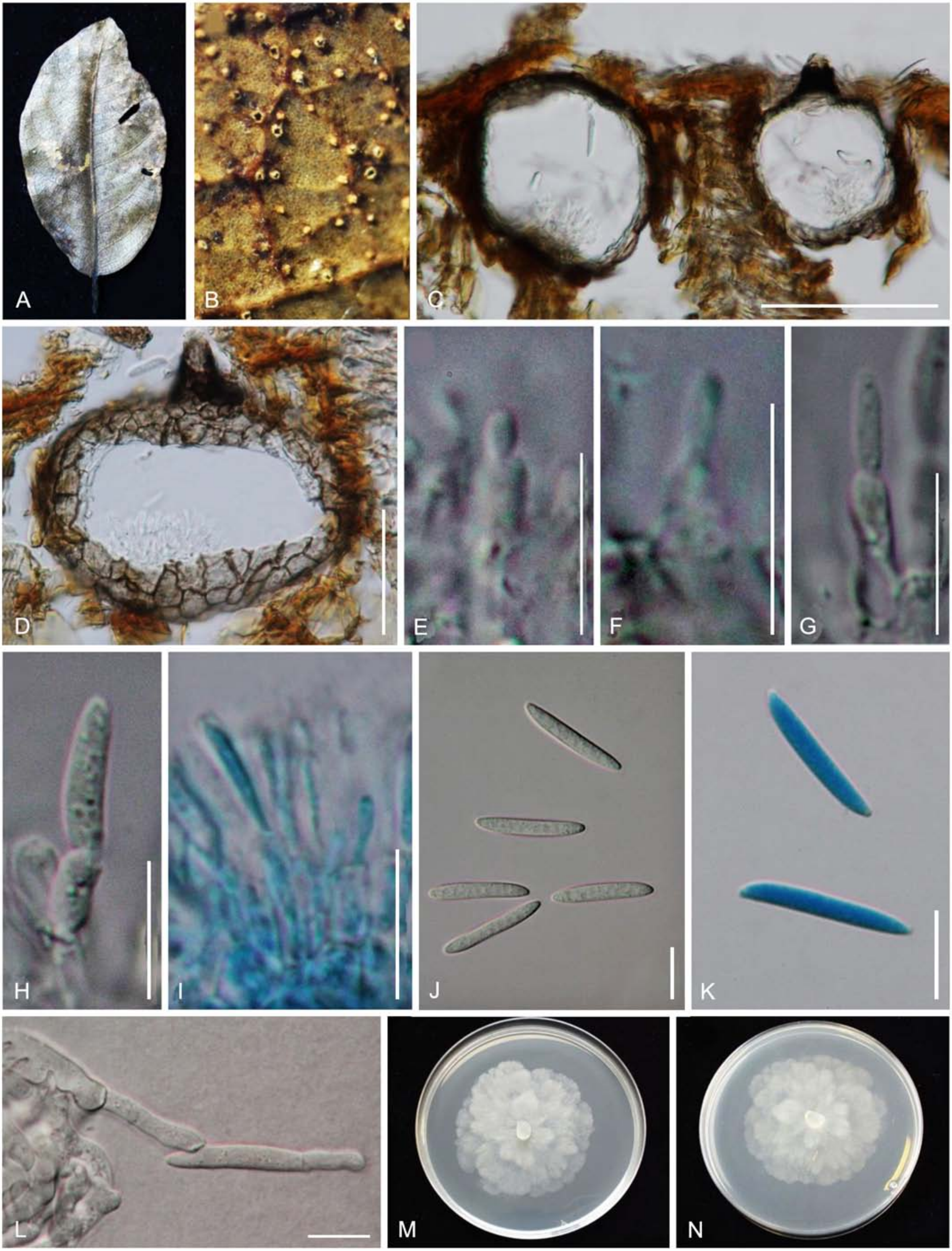

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O


A
B
C
D
E
F
G

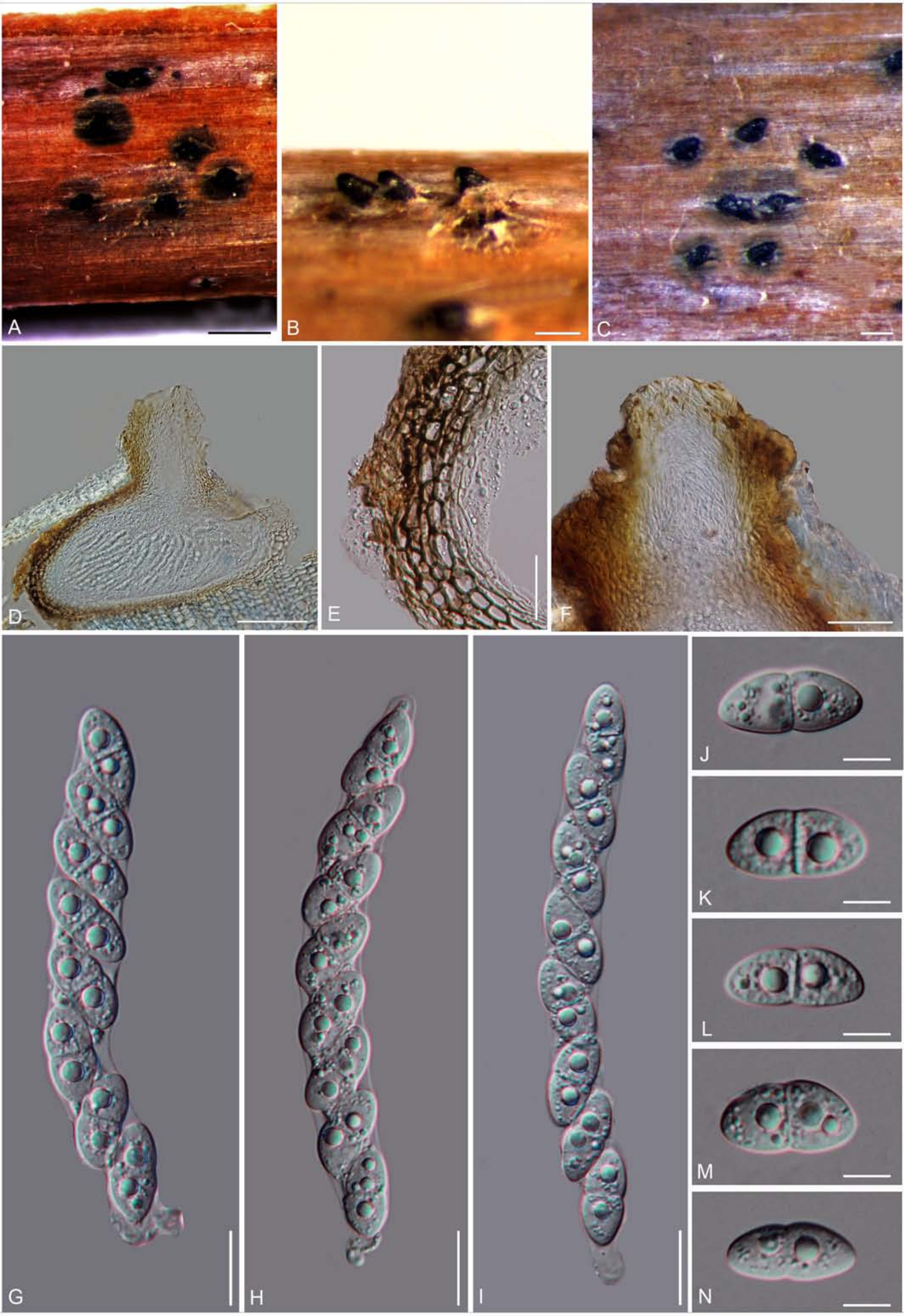

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q


A
B
C
D
E
F
G
H
I
J


A
B
C
D
E
F
G
H
I
J
K
L


A
B
C
D
E
F
G
H
I
J
K
L
M
N


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S


A
B
C
D
E
F
G
H
I
J
K
L
M
N


A
B
C
D
E
J
K
L
M
F
G
H
I

Table 1. Details of the strains included for molecular and/or morphological study.

Fungal species	**Culture accession no.**	**Specimen voucher no.**
Alnecium auctum	CBS 124263	WU 30206
Ambarignomonia petiolorum	CBS 121227	BPI 844274
	CBS 116866	BPI 843530
Amphilogia gyrosa	CBS 112922	AFTOL-ID 1985
	YMJ 91123101	HAST 91123101
	CMW 10470	–
Amphiporthe hranicensis	CBS 119289	BPI 843515
Anisogramma anomala	529478	–
Anisogramma virgultorum	529479	–
Apiognomonia errabunda	AR 2813	AR 2813
Apiognomonia veneta	MFLUCC 16−1193	MFLU 17−0896
	MFLUCC 17−1656	MFLU 17−0896B
	CBS 897.79	Monod LAU
Apioplagiostoma populi	ID 858501	ApLA2
Apiosporopsis carpinea	CBS 771.79	–
Apiosporopsis sp.	Masuya 11Af2−1	–
Apoharknessia insueta	CBS 111377	CPC 1451
	CBS 114575	CPC 10947
Ascitendus austriacus	CBS 131685	–
	CBS 102665	–
Asteroma alneum	CBS 109840	–
Asteroma sp.	Masuya 8Ah9−1	–
Asterosporium asterospermum	–	MFLU 15−3555
	KT 2125	HHUF 30038
	CBS 112404	–
	KT 2101	HHUF 30037
	KT 2138	HHUF 30039
Aurantioporthe corni	MNA 1003	–
	SDS 1001	–
Aurantiosacculus acutatus	CPC 13704	CBS H-20933
Aurantiosacculus eucalyptorum	CPC 13229	–
Aurapex penicillata	CMW 11296	–
	CMW 10032	–
Auratiopycnidiella tristaniopsis	CBS 132180	CBS H-20932
Aurifilum marmelostoma	CBS 124930	CMW 28288
	CBS 124929	PREM 60257
Brachysporium nigrum	MR 1346	–
Cainiella johansonii	Kruys 727 (UPS)	–
	Kruys 731 (UPS)	–
Calosphaeria pulchella	CBS 115999	JF 3200
Celoporthe dispersa	CMW 9978	–
Celoporthe eucalypti	CMW 26913	–
Chaetoconis polygoni	–	MFLU 17−0965
	CBS 405.95	–
Chapeckia nigrospora	CBS 125532	BPI 863766
Chiangraiomyces bauhiniae	MFLUCC 17−1669	MFLU 17−0964
	MFLUCC 17−1670	CHUNI 81

Chromendothia citrina	AR 3445	–
	CBS 109758	BPI 747935
Chrysocrypta corymbiae	CBS 132528	CPC 19279
Chrysofolia barringtoniae	TBRC 5647	SDBR-CMUENBA048
Chrysofolia colombiana	CPC 24986	CBS 139909
Chrysoporthe cubensis	CMW 14394	–
Chrysoporthella hodgesiana	CMW 10641	CBS 115854
Coniella africana	CBS 114133	CBS H-22706
Coniella australiensis	IMI 261318	BPI 748425
Coniella crousii	NFCCI 2213	AMH 9406
Coniella fragariae	CBS 110394	RMF 74.01
	CBS 172.49	STE-U 3930
Coniella koreana	CBS 143.97	CBS H-22710
Coniella pseudokoreana	MFLUCC 12−0427	MFLU 13−0282
	MFLUCC 17−1673	MFLU 13−0282B
Coniella pseudostraminea	CBS 814.71	IMI 233050
Coniella quercicola	CBS 283.76	–
Coniella straminea	CBS 149.22	STE U 3932
Coniella tibouchinae	CPC 18511	BECM1
Coniella wangiensis	CPC 19397	CPC 19397
Coryneum longipes	AR 3541	BPI 872021
Coryneum modonia	AR 3558	BPI 749131
Coryneum umbonata	AR 3897	BPI 843585
Corynym arausiaca	MFLUCC 13−0658	MFLU 17−0875
	MFLUCC 15−1110	BBH 42437
Crinitospora pulchra	CBS 138014	CBS H-21729
Cryphonectria parasitica	ATCC 38755	–
	AFTOL ID 2123	ATCC 38755
Cryptodiaporthe aesculi	AR 3580	BPI 748430
	CBS 109765	AFTOL-ID 1238
Cryptometrion aestuescens	CMW 18790	PREM 60249
	CMW 18793	–
Cryptosporella hypodermia	CBS 116866	BPI 748432
Cryptosporella suffusa	CBS 121077	BPI 871231
Cytospora ambiens	ATCC 52280	ATCC 52280
Cytospora austromontana	Willow21	–
Cytospora carbonacea	CFCC 50056	–
Cytospora cedri	CBS 196.50	–
Cytospora centrivillosa	MFLUCC 16−1206	MFLU 17−0887
	MFLUCC 17−1660	BBH 42449
	–	MFLU 17−0999
Cytospora ceratosperma	AR 3426	–
Cytospora chrysosperma	CFCC 89630	–
Cytospora fraxinigena	MFLUCC 14−0868	BBH 42442
	–	MFLU 17−0880
Cytospora germanica	CXY 217	–
Cytospora hippophaes	CFCC 89640	–
Cytospora junipericola	–	BBH 42444
	–	MFLU 17−0882
Cytospora mali	CFCC 50044	–

Cytospora malicola	SXFX−V2	−
Cytospora melanodiscus	Jimslanding2	−
	Worrall2b	−
Cytospora melnikii	MFLUCC 16−0635	T 1104
Cytospora nivea	CFCC 89643	−
Cytospora punicae	CBS 199.50	
Cytospora quercicola	MFLUCC 14−0867	BBH 42443
	−	MFLU 17−0881
Cytospora ribis	CFCC 50027	−
Cytospora rosae	MFLUCC 14−0845	MFLU 17−0885
	MFLUCC 17−1664	BBH 42447
Cytospora sacculus	CFCC 89625	−
Cytospora salicina	MFLUCC 16−0637	T-1017
	MFLUCC 16−1190	MFLU 17−1655
Cytospora sordida	HMBF 159	−
Cytospora sp.	CMON41	−
Cytospora translucens	CZ320	−
Diaporthe azadirachtae	TN 01	−
Diaporthe cassines	CBS 136440	CPC 21916
Diaporthe cynaroidis	150e	−
	CBS 122676	CMW 22190
Diaporthe decedens	CBS 114281	UPSC 2957
Diaporthe eres	MFLUCC 17−1667	T400
	MFLUCC 17−1668	MFLU 17−0890
	MFLUCC 14−0862	T98
	MFLUCC 17−1661	MFLU 17−0889
	AR 5193	−
	PS57	−
Diaporthe eucalyptorum	MFLUCC 12−0306	−
Diaporthe litoricola	MFLUCC 16−1195	BBH 42436
	MFLUCC 17−1657	MFLU 17−0894
Diaporthe maytenicola	CBS 136441	CPC 21896
Diaporthe nobilis	Napa911	−
Diaporthe rudis	−	IT 1526
	−	MFLU 17−0895
	MFLUCC 16−1197	BBH 42452
	MFLUCC 17−1658	MFLU 15−2661
	LC6147	−
	BPI 748231	−
	CBS 113201	CBS H-7950
Diaporthella corylina	CBS 121124	BPI 871218
Diaporthella sp.	CN5	−
	CN13	−
Dicarpella dryina	ICMP 14042	−
	ICMP 14043	−
Diplodina microsperma	CBS 114545	CPC 2336
Discula destructiva	CBS 109771	BPI 1107757
	MD 254	BPI 1107741
Disculoides eucalypti	CPC 17650	−
Disculoides eucalyptorum	CBS 132184	CPC 17648

Ditopella biseptata	–	MFLU 17−0884B
	–	MFLU 17−0884
Ditopella ditopa	CBS 109748	BPI 748439
Ditopellopsis sp.	CBS 121471	BPI 872061
Dwiroopa lythri	AR 3383	BPI 747560
Endothia gyrosa	CMW 2091	CRY 1515
Endothiella gyrosa	CMW 10436	AFTOL-ID 1223
Erythrogloeum hymenaeae	CPC 18819	–
Eutypella sp.	MFLUCC 16−1215	BBH 42446
Foliocryphia eucalypti	CBS 124779	CPC 12494
Gnomonia gnomon	CBS 829.79	Monod 267 LAU
	CBS 199.53	–
Gnomoniella fraxini	AR 3999	BPI 843391
	AR 2793	BPI 746411
Gnomoniopsis agrimoniae	MFLUCC 14−0844	MFLU 17−0888
	MFLUCC 17−1662	BBH 42450
Gnomoniopsis alderdunensis	CBS 125680	BPI 879186
Gnomoniopsis chamaemori	CBS 803.79	Monod 345 LAU
Gnomoniopsis racemula	AR 3892	BPI 871003
Greeneria saprophytica	MFLUCC 12−0298	MFLU 13−0255
Greeneria uvicola	FI1 2007	–
	FI1 2008	–
Hapalocystis berkeleyi	AR 3851	–
	MFLUCC 13−0662	IT 1187
Harknessia eucalypti	CBS 342.97	–
	CPC 13643	–
Harknessia karwarrae	CPC 10928	–
Harknessia molokaiensis	CBS 114877	–
	CPC 19269	–
Harknessia weresubiae	CBS 113075	–
	CPC 5109	–
Hercospora tiliae	AR 3526	–
Holocryphia eucalypti	CBS 115852	CMW 14545
	CMW 7033	PREM 56305
Hyaliappendispora galii	MFLUCC 16−1208	MFLU 17−0893
	MFLUCC 17−1761	MFLU 17−0966
Hyalorostratum brunneisporum	A573 2b	ILL 40792
Immersiporthe knoxdaviesiana	CMW 37314	PREM 60740
	CMW 37319	PREM 60739
Juglanconis juglandina	D96	WU 35960
	AR 3860	WU 35959
	CBS 121083	BPI 843622
Juglanconis oblonga	MAFF 410216	TFM FPH 2623
	MAFF 410217	TFM FPH 3599
Juglanconis pterocaryae	MAFF 410079	TFM FPH 3373
Lamproconium desmazieri	AR 3525	BPI 748445
	MFLUCC 15−0870	MFLU 15−1940
	MFLUCC 14−1047	MFLU 14−0780
	MFLUCC 15−0872	MFLU 15−2111
	MFLUCC 15−0873	MFLU 15−2192

	MFLUCC 15−0871	MFLU 15−2037
Lanspora coronata	AFTOL-ID 736	JK 5839A
Lasmenia sp.	CBS 124122	LMS 2011b
	CBS 124123	LMS 2011c
	CBS 124124	LMS 2011d
	CBS 124125	LMS 2011a
Latruncellus aurorae	CBS 125526	PREM 60348
	CBS 124904	PREM 60349
Leucostoma kunzei	ATCC 64881	ATCC 64881
Luteocirrhus shearii	CBS 130776	PERTH 08439362
	CBS 130775	PERTH 08355312
Macrohilum eucalypti	CPC 10945	−
	CPC 19421	CBS H-22279
Mamianiella coryli	−	BPI 877578
Marsupiomyces epidermoidea	−	MFLU 15−2921
	−	BBH 42451
Marsupiomyces quercina	MFLUCC 13−0664	MFLU 17−0876
	MFLUCC 14−0566	BBH 42438
Mastigosporella anisophylleae	CPC 22461	−
	CBS 136421	CBS H-21429
Mazzantia napelli	AR 3498	BPI 748443
	AFTOL-ID 2126	AR 3498
Melanconiella chrysodiscosporina	MFLUCC 17−1671	MFLU 16−1309
Melanconiella chrysomelanconium	−	MFLU 17−0879
Melanconiella ellisii	−	BPI 878343
Melanconiella spodiaea	SPOD1	WU 31854
Melanconis alni	AR 3748	BPI 872035
	AR 3500	BPI 748444
Melanconis italica	MFLUCC 17−1659	MFLU 15−1112
	MFLUCC 16−1199	MFLU 17−0883
Melanconis marginalis	AR 3442	BPI 748446
Melanconis stilbostoma	E01051	−
	E00153	−
	AR 3548	−
	AR 3501	BPI 748234
Microascospora fragariae	1.1	−
	1.3	−
	12	−
Microascospora rubi	−	MFLU 17−0886
	−	BBH 42448
Microthia havanensis	CMW 11298	PREM 57518
	CMW 38367	−
Myrmecridium montsegurinum	JF 13180	PRM 934684
Occultocarpon ailaoshanense	LCM 524.01	BPI 879253
	LCM 522.01	BPI 879254
Ophiodiaporthe cyatheae	YMJ 1364	HAST 1364
Ophiognomonia melanostyla	LCM 389.01	BPI 879257
Ophiognomonia vasiljevae	AR 4298	BPI 877671
Ophiostoma gemellus	CMW 23059	−
Pachytrype princeps	Rogers s.n.	−

Pachytrype rimosa	FF1066	–
Papulosa amerospora	AFTOL-ID 748	JK 5547F
Paradiaporthe artemisiae	MFLUCC 14−0850	MFLU 12−2131
	MFLUCC 17−1663	BBH 42448
Phaeoacremonium aleophilum	CBS 631.94	–
Phaeoacremonium vibratilis	CBS 117115	BPI 2460
Phaeoappendispora thailandensis	MFLUCC 13−0161	MFLU 17−0873
	MFLUCC 17−1762	BBH 42435
Phaeocytostroma ambiguum	CPC 17077	–
	CPC 17078	–
Phaeodiaporthe appendiculata	CBS 123821	WU 32449
	CBS 123809	WU 32448
Phragmoporthe conformis	MFLUCC 14−0567	MFLU 15−2662
	AR 3632	BPI 748450
Plagiostoma dilatatum	LCM 402.02	BPI 878957
Plagiostoma jonesii	MFLUCC 16−1189	MFLU 17−0878
	MFLUCC 17−1654	BBH 42440
Plagiostoma salicellum	CBS 109755	BPI 843490
Plagiostoma salicicola	MFLUCC 13−0656	MFLU 17−0877
	MFLUCC 17−1666	BBH 42439
Pleuroceras capreae	CBS 372.69	–
Pleuroceras oregonense	AR 4333	BPI 877719
Pleuroceras pleurostylum	CBS 906.79	Monod 469/LAU
Pleuroceras tenellum	CBS 121082	BPI 871059
Prosopidicola mexicana	CBS 113529	CBS-H 7948
	CBS 113530	C 158
Pseudoplagiostoma corymbiae	CPC 19287	CBS H- 20957
Pseudoplagiostoma eucalypti	CBS 124807	CBS H-20303
	CPC 14161	–
Pseudoplagiostoma oldii	CBS 115722	–
	CBS 124808	CBS H-20300
Pseudoplagiostoma variabile	CBS 113067	CBS H-20304
Pustulomyces bambusicola	MFLUCC 11−0436	MFLU 13−0369
Pyricularia bothriochloae	CPC 21650	CBS-H 21436
Pyricularia oryzae	REA 8401	PH0063
Rossmania ukurunduensis	AR 3484	BPI 747566
Rostraureum tropicale	CMW 9972	PREM 57519
	CMW 9975	–
Sillia ferruginea	AR 3440	BPI 843619
	CBS 126567	BPI 843619
Sirococcus tsugae	CBS 119626	BPI 871167
	AR 4010	–
Sordaria fimicola	CBS 508.50	–
Stegonsporium acerophilum	CBS 117025	WU 28050
Stenocarpella macrospora	CBS 117560	MRC 8615
Stenocarpella maydis	CBS 117559	MRC 8614
Stilbospora ellipsosporum	WJ 1840	–
Stilbospora macrosperma	CBS 121883	–
Sydowiella depressula	CBS 813.79	–
Sydowiella fenestrans	CBS 125530	BPI 843503

Sydowiella urticicola	MFLUCC 13−0665	MFLU 13−0260
	MFLUCC 17−1665	BBH 42439
Thyridium vestitum	AFTOL-ID 172	OSC 100064
Tubakia seoraksanensis	CBS 127490	−
	BJFCCC140824−15	−
Tubakia thailandensis	MFLUCC 12−0303	MFLU 13−0260
	MFLUCC 17−1672	MFLU 13−0260B
Ursicollum fallax	CMW 18119	PREM 58840
Valsalnicola oxystoma	AR 4833	BPI 884137
	AR 5137	BPI 884135
Valsella salicis	AR 3514	BPI 748461
Valseutypella multicollis	CBS 105.89	−
Waydora typica	PDD 103894	PDD 103894

AFTOL: Assembling the Fungal Tree of Life culture collection; AMH: Ajrekar My
BBH: National Science and Technology Development Agency, Thailand; BECM: B
China; BPI: U.S. National Fungus Collections, Systematic Botany and Mycology Lab
CFCC: China Forestry Culture Collection Center, Beijing, China; CMW: Forestry and
collection of Pedro Crous, The Netherlands; FI: Museo di Storia Naturale dell'Unive
HHUF: Hirosaki University, Japan; ICMP: International Collection of Micro-orga
Mycological Institute, Kew, UK; JF: Jonkershoek Forestry Research Centre, South
MAFF: MAFF Genebank, Ministry of Agriculture Forestry and Fisheries, USA;
University Culture Collection, Thailand; MNA: Museum of Northern Arizona, US
Corvallis, USA; PERM: University of Perm, South Africa; PERTH: Western Aust
Philadelphia, PA; RMF: Rocky Mountain Herbarium, University of Wyoming, US
Pathology Department, South Africa; TBRC: Thailand Bioresource Research Center,
Japan; UPSC: Fungal Culture Collection at the Botanical Museum, Uppsala Universit

	GenBank accession numbers			
Host/substrate	**ITS**	**LSU**	***tef1−α***	***rpb2***
Alnus glutinosa	KF570154	KF570154	KF570200	KF570170
Liquidambar styraciflua	EU254748	EU255070	EU221898	EU219307
Liquidambar styraciflua	EU199193	AY818963	−	EU199151
Elaeocarpus dentatus	−	FJ176889	−	FJ238374
Elaeocarpus japonicus	EF026147	−	KC465404	−
Elaeocarpus japonicus	−	AY194108	−	−
Tilia platyphyllos	EU199178	EU199122	−	EU199137
Corylus avellana	EU683064	EU683066	−	−
Betula pendula	EU683062	EU683065	−	−
Fagus sylvatica	DQ313525	NG027592	DQ313565	DQ862014
Platanus acerifolia	MF190114	MF190056	−	−
Platanus acerifolia	MF190115	MF190057	−	−
Platanus orientalis	−	EU255195	EU221910	EU219259
Populus tremuloides	KP637024	−	−	−
Carpinus betulus	−	AF277130	−	−
Alnus firma	−	AB669034	−	−
Eucalyptus pellita	JQ706083	AY720814	−	−
Eucalyptus pellita	JQ706082	AY720813	−	−
Decayed driftwood of *Alnus glutinosa*	−	AF261067	−	JQ429257
Submerged stems of *Fagus sylvatica*	AF242263	AF242263	−	−
Alnus glutinosa	EU167609	EU167609	−	−
Alnus hirsuta	−	AB669035	−	−
Fagus sylvatica	−	MF190062	−	MF377615
Fagus crenata	−	AB553743	−	−
Fagus sylvatica	−	AB553745	−	−
Fagus crenata	−	AB553742	−	−
Fagus crenata	−	AB553744	−	−
Cornus alternifolia	KF495043	KF495058	−	−
Cornus alternifolia	KF495046	KF495061	−	−
Eucalyptus viminalis	JQ685514	JQ685520	−	−
Eucalyptus globulus	JQ685515	JQ685521	−	−
Myrica faya	AY214315	AY194090	−	−
Miconia theaezans	AY214312	AY194104	−	−
Tristaniopsis laurina	JQ685516	JQ685522	−	−
Terminalia ivorensis	FJ882856	HQ730874	−	−
Terminalia mantaly	FJ882855	HQ730873	−	−
−	−	KT991662	−	KT991652
Dryas sp.	JF701922	−	−	−
Dryas octopetala	JF701922	JF701920	−	−
Prunus sp.	EU367451	AY761075	−	GU180661
Syzygium cordatum	AY214316	HQ730854	HQ730841	−
Eucalyptus EC48 clone	HQ730839	HQ730865	HQ730852	−
Rumex acetosa	−	MF190063	−	−
Polygonum sachalinense	−	EU754141	−	−
Betula sp.	JF681957	EU683068	−	−
Bauhinia sp.	MF190119	MF190064	MF377598	MF377603
Bauhinia sp.	MF190118	MF190065	MF377599	MF377604

Quercus mongolica	–	EU255074	EU222013	EU219342
Quercus mongolica	–	AF408335	–	–
Corymbia sp.	JX069867	JX069851	–	–
Barringtonia sp.	KU948046	KU948045	–	–
Eucalyptus urophylla	KR476738	KR476771	–	–
Eucalyptus sp.	JN942342	JN940856	GQ290137	–
Tibouchina semidecandra	AY692322	–	–	–
Eucalyptus nitens	AY339344	AY339293	KX833600	KX833421
leaf litter	AF408336	AF408336	KX833692	KX833497
Terminalia chebula	HQ264189	–	–	–
Forest soil	KJ710463	KJ710441	KX833695	KX833499
Fragaria sp.	AY339317	AY339282	AY339352	–
–	KX833584	AF408378	KX833684	KX833490
–	MF190145	–	–	–
–	MF190146	–	–	–
Fragaria sp.	KX833582	–	KX833682	–
Eucalyptus nitens	AY339344	AY339293	AY339364	–
Fragaria sp.	AY339348	AY339296	AY339366	KX833506
Tibouchina granulosa	JQ281774	JQ281776	JQ281778	KX833507
Eucalyptus sp.	JX069873	JX069857	KX833705	KX833509
Quercus cerris	–	EU683072	–	–
Castanea sativa	–	EU683073	–	–
Quercus cerris	–	EU683074	–	–
Quercus sp.	MF190120	MF190066	MF377574	MF377609
Quercus sp.	MF190121	MF190067	MF377575	MF377610
Mangifera indica	KJ710466	KJ710443	–	–
Castanea dentata	AY141856	EU199123	EU222014	–
–	–	–	DQ862033	DQ862017
Aesculus hippocastanum	EU199179	AF408342	–	EU199138
Aesculus hippocastanum	–	DQ836905	–	DQ836892
Eucalyptus grandis	GQ369458	HQ730869	–	–
Eucalyptus grandis	GQ369459	HQ730870	–	–
Ulmus minor	EU199181	AF408346	–	EU199140
Alnus incana	EU199184	EU199124	–	EU199142
Acer rubrum	AY347345	AF277146	–	–
–	KM669911	–	KM669767	–
Ulmus pumila	KP281263	KP310809	KP310852	–
–	AF192311	–	JX438575	–
Sorbus domestica	MF190122	MF190068	–	MF377600
Sorbus domestica	MF190123	MF190069	–	MF377601
Sorbus domestica	MF190124	MF190070	–	–
–	–	EU255209	–	–
Salix psammophila	KF765674	KF765690	–	KF765706
Fraxinus ornus	MF190133	MF190078	–	–
Fraxinus ornus	MF190134	MF190079	–	–
Populus sp.	JQ086564	JX524618	–	–
Hippophae rhamnoides	KF765682	KF765698	KP310865	KF765714
Juniperus communis	MF190126	MF190071	MF377579	–
Juniperus communis	MF190125	MF190072	MF377580	–
Malus baccata	KR045637	KR045717	–	–

Malus pumila	GU174579	–	JQ900335	–
Alnus tenuifolia	JX438621	–	JX438605	–
Alnus tenuifolia	JX438620	–	JX438606	–
Populus nigra	KY417736	KY417770	–	–
Salix psammophila	KF765685	KF765701	–	KF765717
Punica granatum	JX438622	–	JX438568	–
Quercus sp.	MF190129	MF190073	–	–
Quercus sp.	MF190128	MF190074	–	–
Ulmus pumila	KP281268	KP310814	KP310857	–
Rosa canina	MF190131	MF190075	–	–
Rosa canina	MF190130	MF190076	–	–
Juglans regia	KR045646	KR045725	KP310861	–
Salix fragilis	KY417751	KY417785	–	–
Cornus sanguinea	MF190132	MF190077	–	–
Juglans regia	KF225613	KF225627	–	–
Phaseolus vulgaris	JQ753989	JQ754081	–	–
–	FJ755269	FJ755269	–	–
Azadirachta indica	KC631323	–	–	–
Cassine peragua	KF777155	KF777208	KF777244	–
Myrtus communis	KC959207	–	–	–
Protea cynaroides	KC343058	EU552122	–	–
Corylus avellana	KC343059	AF408348	–	–
Fraxinus pennsylvanica	MF190137	MF190080	MF377594	–
Fraxinus pennsylvanica	MF190138	MF190081	MF377595	–
Catalpa bignonioides	MF190135	MF190082	MF377596	–
Catalpa bignonioides	MF190136	MF190083	MF377597	–
Ulmus sp.	KJ210529	–	KJ210550	–
Glycine max	JF430494	JF704176	–	–
Leaf litter	KT459419	–	KT459453	–
Stem of sea-shore plant	MF190139	MF190086	–	–
Stem of sea-shore plant	MF190140	MF190087	–	–
Maytenus acuminata	KF777157	KF777210	–	–
–	KM669958	–	KM669814	–
Acer campestre	MF190141	MF190088	MF377576	–
Acer campestre	MF190142	MF190089	MF377577	–
Umbelliferous stem	MF190143	MF190085	–	–
Umbelliferous stem	MF190144	MF190084	–	–
Dendrobenthamia japonica	KY011890	KY011864	KY011901	–
–	–	AF362560	–	–
Vitis vinifera	–	–	–	–
Corylus sp.	KC343004	–	–	–
Corylus avellana	KP205483	–	KP205456	–
Corylus avellana	KP205484	–	KP205457	–
Quercus sp.	KC145909	–	KC145954	–
Quercus ilex	KC145858	–	KC145955	–
Protea sp.	JN712461	JN712525	–	–
Cornus nuttallii	EU199186	AF408359	–	EU199144
Cornus florida	AF429741	AF429721	AF429732	–
Eucalyptus sp.	JQ685517	JQ685523	–	–
Eucalyptus viminalis	NR120090	–	–	–

Alnus glutinosa	MF190147	MF190091	–	MF377616
Alnus glutinosa	MF190148	MF190090	–	MF377617
Alnus glutinosa	DQ323526	EU199126	–	EU199145
Clethra alnifolia	EU254763	EU255088	EU221936	EU219254
Lythrum salicaria	–	AF408364	–	–
Quercus palustris	AF046905	AY194114	–	–
Quercus sp.	AF452117	–	–	–
Hymenaea courbaril	JQ685519	JQ685525	–	–
Alnus cordata	MF190165	MF190112	MF377578	MF377618
Eucalyptus coccifera	GQ303276	GQ303307	–	–
Populus sp.	AY818957	AY818964	EU221905	–
Corylus avellana	DQ491518	AF408361	EU221885	EU219295
Fraxinus americana	AY455814	AY455818	–	–
Fraxinus americana	AY455813	AY455817	–	–
Agrimonia eupatoria	–	MF190093	MF377585	–
Agrimonia eupatoria	–	MF190092	MF377586	–
Rubus parviflorus	GU320825	–	–	–
Rubus chamaemorus	EU254808	EU255107	–	–
Epilobium angustifolium	EU254841	EU255122	EU221889	EU219241
Syzygium cumini	KJ021933	KJ021935	–	–
Vitis sp.	HQ586009	GQ870619	–	–
Vitis sp.	HQ586010	GQ870620	–	–
–	–	EU683069	–	–
Platanus sp	–	KP744486	–	–
Eucalyptus regnans	AY720745	AF408363	–	–
Eucalyptus regnans	JQ706089	JQ706215	–	–
Eucalyptus botryoides	AY720748	AY720841	–	–
Eucalyptus robusta	AY720749	AY720842	–	–
Eucalyptus cypellocarpa	JQ706127	JQ706248	–	–
Eucalyptus sp.	AY720741	AY720835	–	–
Eucalyptus sp.	AY720744	AY720838	–	–
Tilia tomentosa	–	AF408365	–	–
Eucalyptus sp.	JQ862840	JQ862797	JQ863037	–
Eucalyptus saligna	JQ862838	JQ862795	JQ863035	–
Galium sp.	MF190150	MF190095	MF377587	–
Galium sp.	MF190149	MF190094	MF377588	–
–	–	HM191720	–	–
Rapanea melanophloeos	JQ862770	JQ862760	–	–
Rapanea melanophloeos	JQ862765	JQ862755	–	–
Juglans regia	KY427145	KY427145	KY427214	KY427195
Juglanconis juglandina	KY427149	–	KY427218	KY427199
Juglans regia	KY427148	KY427148	KY427217	KY427198
Juglans ailanthifolia	KY427153	KY427153	KY427222	KY427203
Juglans ailanthifolia	KY427154	KY427154	KY427223	KY427204
Pterocarya rhoifolia	KY427155	KY427155	KY427224	KY427240
Tilia sp.	–	AF408372	–	–
Tilia sp.	KX430134	KX430135	MF377591	MF377605
Tilia sp.	KX430132	KX430133	MF377592	
Tilia sp.	KX430139	AF408372	MF377593	MF377606
Tilia sp.	KX430140	KX430141	–	–

Tilia sp.	KX430136	KX430137	−	−
−	−	U46889	−	DQ470899
Nephelium lappaceum	GU797405	JF838337	−	−
Nephelium lappaceum	GU797406	JF838338	−	−
Nephelium lappaceum	JF838336	JF838341	−	−
Nephelium lappaceum	GU797407	JF838340	−	−
Galpinia transvaalica	HQ171209	HQ171214	−	−
Galpinia transvaalica	GU726946	HQ171213	−	−
Picea pungens	AY347320	−	JX438595	−
Banksia baxteri	KC197021	KC197019	−	−
Banksia baxteri	KC197024	KC197018	−	−
Eucalyptus sp.	DQ195781	DQ195793	−	−
Eucalyptus piperita	KR873244	KR873275	−	−
Corylus californica	EU254862	−	−	−
Quercus robur	−	MF190058	−	−
Quercus robur	−	MF190059	−	−
Quercus sp.	MF190116	MF190061	−	−
Quercus sp.	MF190117	MF190060	−	−
Anisophyllea sp.	KF779492	KF777221	−	−
Anisophyllea sp.	NR137844	−	−	−
Aconitum lycoctonum	−	AF408368	EU222017	EU219345
−	−	−	−	DQ862020
Fagus sylvatica	MF190166	−	−	−
Carpinus betulus	MF190167	MF190113	−	MF377619
Carpinus caroliniana	JQ926271	−	JQ926406	JQ926339
Carpinus betulus	JQ926301	−	−	JQ926367
Alnus viridis	EU199195	EU199130	−	EU199153
Alnus viridis	−	AF408371	EU221896	EU219300
Alnus cordata	MF190152	MF190097	−	MF377602
Alnus cordata	MF190151	MF190096	−	−
Alnus rubra	EU199197	AF408373	EU221991	EU219301
−	AY577814	AY577813	−	−
−	AY577811	AY577810	−	−
Betula sp.	−	AF362567	−	−
Betula alba	−	−	EU221886	EU219299
−	HM854850	−	−	−
−	HM854852	−	−	−
−	HM854849	−	−	−
Rubus ulmifolia	MF190154	MF190098	MF377581	MF377611
Rubus ulmifolia	MF190153	MF190099	MF377582	MF377612
Eucalyptus saligna	AY214320	AY194091	−	−
Psidium cattleianum	KJ027495	−	−	−
Fraxinus excelsior	KT991674	KT991664	−	KT991654
Alnus nepalensis	JF779849	JF779853	−	JF779856
Alnus nepalensis	JF779848	JF779852	JF779862	JF779857
Cyathea lepifera	JX570889	JX570891	KC465406	JX570893
Tilia cordata	JF779850	JF779854	−	JF779858
Juglans nigra	EU254977	EU255162	EU221999	EU219331
Tarsonemus sp.	DQ821562	DQ821533	−	−
−	−	FJ532382	−	−

–	–	FJ532381	–	–
–	–	DQ470950	–	DQ470901
Artemisia sp.	MF190155	MF190100	MF377583	–
Artemisia sp.	MF190156	MF190101	MF377584	–
Vitis vinifera	AF266647	AB278175	KF764643	–
Fagus sylvatica	KF764573	DQ649065	KF764645	HQ878611
Quercus sp.	MF190157	MF190102	–	MF377613
Quercus sp.	MF190158	MF190103	–	MF377614
Zea mays	FR748041	FR748100	FR748073	–
Zea mays	FR748044	FR748101	FR748074	–
Acer campestre	KF570156	KF570156	–	–
Acer campestre	KF570155	KF570155	–	–
Alnus glutinosa	KU315388	KU315389	KU315391	–
Alnus rubra	–	AF408377	–	–
Salix irrorata	GU367070	–	–	GU367104
umbelliferous stem	MF190159	MF190104	MF377589	–
umbelliferous stem	MF190160	MF190105	MF377590	–
Salix sp.	EU255047	–	EU221912	–
Salix sp.	MF190161	MF190106	–	–
Salix sp.	MF190162	MF190107	–	–
Salix sp.	–	AF277143	–	–
Salix sitchensis	EU255060	EU255196	EU221931	EU219313
Salix helvetica	EU255061	EU255197	EU221962	EU219311
Acer rubrum	EU199199	EU255202	EU221907	EU199155
Prosopis glandulosa	AY720709	–	–	–
Prosopis glandulosa	AY720710	–	–	–
Corymbia sp.	JX069861	JX069845	–	–
Eucalyptus urophylla	GU973512	GU973606	GU973542	–
Eucalyptus camaldulensis	GU973510	GU973604	GU973540	–
Eucalyptus camaldulensis	GU973535	GU973610	GU973565	–
Eucalyptus camaldulensis	GU973534	GU973609	GU973564	–
Eucalyptus globulus	GU973536	GU973611	GU973566	–
Bambusa sp.	KF806752	KF806753	KF806755	–
Bothriochloa bladhii	KF777186	KF777238	–	–
Ophiuros exaltatus	KM484916	KM485022	–	–
Acer ukurunduense	–	EU683075	–	–
Terminalia ivorensis	AY167436	AY194092	–	–
Terminalia ivorensis	AY167439	–	–	–
Corylus avellana	JF681959	EU683076	–	–
Corylus avellana	JF681959	EU683076	–	–
Tsuga mertensiana	EU199203	EU199136	EF512534	EU199159
Cedrus deodara	EF512478	EU255207	EU221928	EU219289
Dung	AY681188	AY681160	–	DQ368647
Acer saccharum	EU039982	EU039993	EU040027	KF570173
Zea mays	FR748048	EU754219	–	–
Zea mays	FR748052	DQ377937	–	–
Carpinus betulus	–	AY616229	–	–
Carpinus betulus	JX517290	JX517299	–	KF570196
Rubus sp.	EU552156	–	–	–
Chamerion angustifolium	JF681956	EU683078	–	–

Urtica dioica	–	MF190108	–	–
Urtica dioica	–	MF190109	–	–
–	–	AY544671	–	DQ470890
Quercus mongolica	HM991734	KP260499	–	–
–	KP260502	KP260501	–	–
Decaying leaf	MF190163	MF190110	–	–
Decaying leaf	MF190164	MF190111	–	–
Coccoloba uvifera	DQ368755	EF392860	–	–
Alnus viridis	JX519559	JX519563	–	–
Alnus tenuifolia	JX519561	–	–	–
Salix fragilis	–	EU255210	EU222018	EU219346
Quercus ilex	DQ243803	–	–	–
–	KF727412	KF727413	–	–

cological Herbarium, India; ATCC: American Type Culture Collection, Virginia, USA; ritish Empire and Commonwealth Museum, UK; BJFCCC: Beijing Forestry University, oratory, USA; CBS: Westerdijk Fungal Biodiversity Institute, Utrecht, The Netherlands; l Agricultural Biotechnology Institute, University of Pretoria, South Africa; CPC: Culture rsita, Italy; HAST: Herbarium, Biodiversity Research Center, Academia Sinica, Taiwan; nisms from Plants, New Zealand; ILL: University of Illinois, USA; IMI: International Africa; LCM: Universidad de Chile, Laboratorio de Citogenetica de Mamiferos, Chile; MFLU: Mae Fah Luang University herbarium, Thailand; MFLUCC: Mae Fah Luang A; NFCCI: National Fungal Culture Collection, India; OSC: Oregon State University, ralian Herbarium, Australia; PH: Academy of Natural Sciences of Drexel University, A; SDSU: San Diego State University, USA; STE-U: University of Stellenbosch, Plant Bangkok, Thailand; TFM: Forestry and Forest Products Research Institute, Matsunosato, y, Sweden; WU: Universitaet Wien, Austria.