



Taxonomy and phylogeny of Dothideomycetes

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The ascomycete class Dothideomycetes comprises a highly diverse range of fungi characterized mainly by bitunicate asci, usually with fissitunicate dehiscence. Species are saprobes, with many asexual states comprising extremely important plant pathogens. They are also endophytes, epiphytes, fungicolous, lichenized, or lichenicolous fungi. They occur worldwide in terrestrial, freshwater and marine habitats. Until recently the taxonomy of Dothideomycetes was confused and based mostly on a limited number of morphological characters. Molecular data has been recently incorporated into their study and a more natural phylogeny of the group is emerging. The recent monograph of 105 families by Hyde and co-workers (2013), with a phylogenetic tree based on four genes, has advanced the understanding of this group and kick-started further studies.

This special issue on Dothideomycetes contains 26 papers that provide updated data on several families including Didymellaceae, Elsinoaceae, Englerulaceae, Microthyriaceae, Myriangiaceae and Trichopeltinaceae (= Brefeldiellaceae). An on-going series of papers, *Towards a natural classification of Dothideomycetes* (Ariyawansa *et al.* 2013) is extended, re-visiting the generic types of 24 genera that have been categorized in Dothideomyces *incertae sedis* and are poorly known. These five additional papers (e.g., Ariyawansa *et al.* 2014, Thambugala *et al.* 2014) provide descriptions, illustrations and suggested taxonomic placements, together with new molecular data.

A new family, Wiesneriomycetaceae, is introduced by Suetrong *et al.* (2014). *Clavatispora* (Venturiales) and *Hysterodifractum* (Hysteriaceae) are introduced as new genera (Boonmee *et al.* 2014, de Almeida *et al.* 2014). New species are described in the genera *Anteaglonium*, *Barriopsis*, *Clavatispora*, *Graphyllum*, *Homortomyces*, *Hysterodifractum*, *Leptoxyphium*, *Microthyrium*, *Phaeosphaeriopsis*, *Pseudorobillarda*, *Trichopeltina*, *Venustosynnema* and *Zasmidium*. The new coelomycete species, *Pseudorobillarda eucalypti*, is shown to belong to a distinct phylogenetic lineage that may eventually require separate family status.

Several genera are revised with new molecular data including *Graphyllum* (Hysteriales), *Macrodiplodiopsis* and *Vaginatispora* (= *Lophiostoma*, Lophiostomataceae), *Microthyrium* (Microthyriaceae), *Kalmusia* (Montagnulaceae), *Phaeosphaeriopsis* (Phaeosphaeriaceae), *Anteaglonium* (Pleosporales), and *Homortomyces* and *Pseudorobillarda* (Dothideomycetes *incertae sedis*). The type species of the asexual genera *Bahusandhika*, *Cancellidium* and *Pseudoepicoccum* were recollected and sequence data obtained that shows both *Bahusandhika* and *Pseudoepicoccum* are members of Dothideomycetes but *Cancellidium* belongs in the Sordariomycetes. The sexual state of *Setophoma* is revealed for the first time. Dothideomycetes from ferns result in new data for *Mycosphaerella*, *Pseudocercospora*, *Venustosynnema* and *Zasmidium*.

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