

**References:** Kirk PM, Cannon PF, Minter DW, Stalpers JA. 2008. Dictionary of the Fungi (10th ed.). Wallingford, UK: CABI.  
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## SYSTEMATICS OF DIVISION BASIDIOMYCOTA 2

### THELEPHOROID CLADE

This includes the order Thelephorales, a small group of predominantly ectomycorrhizal fungi with variable basidiocarps. The most important genus is *Thelephora*. *T. terrestris* produces clusters of fanshaped basidiocarps which are chocolate-brown in colour with a paler margin. They are often formed around the stem of young trees, seemingly ‘choking’ them. Basidiocarps of *T. terrestris* superficially resemble those of *Stereum* but are monomitic, composed of clamped generative hyphae only. The basidiospores are brown and warty. *Thelephora terrestris* fruits in association with coniferous trees growing on light sandy soils and heaths. It is one of a group of early-stage ectomycorrhizal associates of a variety of trees and also forms mycorrhiza with *Arbutus menziesii*, a member of the *Ericaceae* (Webster & Weber, 2007).

### HYMENOCHAETOID CLADE

One feature that distinguishes the five *Homobasidiomycete* clades considered in the previous sections from the remaining three clades is the structure of the parentheses, i.e. the membranous structure overarching the septal pore. In the five clades already described, the typical homobasidiomycete dolipore with a perforated parentheses is found, whereas in the hymenochaetoid, cantharelloid and gomphoid-phalloid clades shown in, the parentheses is generally imperforate. Imperforate parentheses are also found in certain *Heterobasidiomycetes*, namely *Dacrymycetales* and *Auriculariales*. The hymenochaetoid clade comprises about 630 species recruited from three families, namely the entire *Hymenochaetaceae* and parts of *Corticaceae* and *Polyporaceae* (Webster & Weber, 2007).

**Family:** *Hymenochaetaceae*

Most members of the hymenochaetoid clade are wood-decomposing fungi, exemplified by the white-rots *Inonotus* and *Phellinus* which often fruit on old living trees and continue to do so after the death of the host. In general terms, the basidiocarps are monomitic and annual in *Inonotus* but dimittic, hard and perennial in *Phellinus*. Generative hyphae typically lack clamp connections in both genera. Fruit body morphology is variable, with resupinate and bracket-like forms most commonly produced; the hymenium is usually poroid. There are transitional forms between the genera *Inonotus* and *Phellinus*, and both have now been split up into several smaller units (Webster & Weber, 2007).

### **CANTHARELLOID CLADE**

This is a further group of Homobasidiomycetes with a wide range of morphologically different basidiocarps. Species likely to be encountered during forays belong to the *Cantharellaceae*, *Hydnaceae* and *Clavulinaceae*. *Tulasnella* might be included in this group, but since members of this genus produce heterobasidia, we regard them as belonging to the *Heterobasidiomycetes* (Webster & Weber, 2007).

#### **Family:** *Cantharellaceae*

The genera *Cantharellus* and *Craterellus* belong to the most sought-after edible species. *Cantharellus* and related species are known as the chanterelles, with *C. cibarius* being the most readily recognized. Another abundant, although less well-known, edible species is *C. tubaeformis*. The fruit bodies of most *Cantharellus* spp. appear in vibrant yellow or red colours due to carotenoid pigments, including canthaxanthin in the case of *C. cinnabarinus*. The fruit bodies are funnel-shaped, and the hymenium consists of shallow branching ridges which are strongly decurrent. Members of this group are ectomycorrhizal with coniferous and broad-leaved trees (Webster & Weber, 2007).

#### **Family:** *Hydnaceae*

#### **Genus:** *Hydnum*

The fruit bodies of the hedgehog fungi *Hydnum repandum* and *H. Rufescens* grow in deciduous and coniferous woodlands where they are ectomycorrhizal. They are more or less mushroom-shaped, with a cap and a central or lateral stipe. *Hydnum* spp. are good to eat and *H. repandum* is often collected for sale in mainland Europe. The basidiocarp construction is monomitic, with generative hyphae which become inflated, giving the fruit body a fleshy texture. The hymenium covers the tapering spines which develop from the lower side of the cap (Webster & Weber, 2007).

**Family:** *Clavulinaceae*

Although the spindle-shaped fruit bodies of *Clavulina* are morphologically very similar to those of *Clavaria*, both genera have been placed in different clades. *Clavulina* spp. are saprotrophic fungi growing in the humus layer in forests and on lawns where they form coral- or spindle-shaped basidiocarps which are white, grey or pale yellow in colour. A common representative is *C. cristata*, which is a variable fungus with highly branched fructifications. A characteristic feature of the genus *Clavulina* is that the basidia are twospored, narrowly cylindrical, and often undergo septation after spore discharge. The hymenium thickens with age. The fruit body construction is monomitic, with clamped inflated hyphae (Webster & Weber, 2007).

## **GOMPHOID PHALLOID CLADE**

There are about 350 species in this group which has given rise to the most fascinating array of gasteromycetes, including the cannonball fungus, earth stars and stinkhorns. These are described in detail in Section 20.4. There are also some genera of actively spore-discharging basidiomycetes in the gomphoid\_phalloid clade, especially with club-shaped and coralloid basidiocarps. These are grouped in the Clavariaceae which are briefly described below (Webster & Weber, 2007).

**Family:** *Clavariaceae*

Hymenomycetes with smooth, branched or unbranched cylindrical or clavate fructifications were previously aggregated into this family, but microscopical and molecular phylogenetic analysis show that such an arrangement groups together unrelated forms, and it is clear that the clavarioid type of fructification has evolved independently in several unrelated basidiomycete groups. For example, *Clavulina* is now included in the cantharelloid clade (Webster & Weber, 2007).

## **REFERENCES**

Kirk PM, Cannon PF, Minter DW, Stalpers JA. 2008. *Dictionary of the Fungi* (10th ed.). Wallingford, UK: CABI.

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