

**References:** Kirk PM, Cannon PF, Minter DW, Stalpers JA. 2008. Dictionary of the Fungi (10th ed.). Wallingford, UK: CABI.  
Webster, J., & Weber, R. (2007). *Introduction to fungi*. Cambridge, UK: Cambridge University Press.  
Url1.: <https://en.wikipedia.org/wiki/Ascomycota>

## SYSTEMATICS OF DIVISION ASCOMYCOTA 1

### **Group:** *Plectomycetes*

*Plectomycetes* is an artificial group of Ascomycota and it originally contained all Ascomycete fungi which produce their asci within a cleistothecium. *Plectomycetes* can be defined by the following set of characters; Cleistothecium or gymnothecium is usually present, ascogenous hyphae are usually not conspicuous, asci are scattered throughout the cleistothecium, asci are mostly globose and thin-walled, and the ascospores are released passively after disintegration of the ascus wall, not by active discharge, ascospores are small, unicellular and usually spherical or ovoid, conidia are commonly produced from phialides or as arthroconidia.

### **Class:** *Eurotiomycetes*

Most members of the class produce an enclosed structure cleistothecium within which they produce their spores. It contains 10 order, 27 families 280 genus and about 3400 species.

### **Order:** *Onygenales*

*Onygenales* members are able to digest keratin and because of this have become dominant organisms in environments where keratin is available. The most members have colorless cleistothecia and ascospores. The spherical to egg-shaped asci are always uniformly packed in the centrum and may be dispersed among hyphal elements. The ascospores are always single-celled (example: *Chrysosporium*, *Microsporium* and *Trichophyton*).

### **Order:** *Eurotiales*

Most members of the order have phialidic asexual stages belonging to the genera *Aspergillus* and *Penicillium* or, less commonly, to *Paecilomyces* or even simpler types. Rarely

there is no anamorph at all. Similar to the *Onygenales* in producing mostly colorless cleistothecia and ascospores. The spherical to egg-shaped asci are always uniformly packed in the centrum and the ascospores are always single-celled (example: *Aspergillus* and *Penicillium*).

**Group:** Perithecial Ascomycete Fungi

Perithecia differ from apothecia in that they completely enclose the asci, leaving only a small pore, the ostiole, for the escape of the spores.

**Class:** *Sordariomycetes*

The class includes 28 orders, 90 families, 600 genus and more than 3000 species. It is an anamorph-rich class, with significant diversity represented by hyphomycete and coelomycete species.

**Class:** *Laboulbeniomyces*

Members of the class are a unique group of fungi that are apparent external parasites of insects and other arthropods, both terrestrial and aquatic.

**Subdivision:** *Taphrinomycotina*

The Taphrinomycotina are one of three subdivisions constituting the Ascomycota. Recent molecular studies suggest that the group is monophyletic and basal to the rest of the Ascomycota. The major taxa are *Schizosaccharomycetes*, *Taphrinomycetes*, *Neoelectromycetes*, and *Pneumocystis*.

**Class:** *Schizosaccharomycetes*

The class comprises the fission yeasts and it includes single order and family, 2 genera and 5 species. Schizosaccharomycetes members are the yeasts that reproduce by fission rather than budding, unlike most other yeasts, many of which are in the subdivision *Saccharomycotina*.

**Class:** *Taphrinomycetes*

*Taphrinomycetes* contains the single order, 2 families, 8 genera and 140 species. Members of the class are dimorphic plant parasites with both a yeast state and a filamentous state in infected plants. They characteristically infect leaves, catkins, and branches, not roots. *Taphrinomycetes* form asci but no ascomata.

**Class:** *Neoelectomycetes*

The class includes single ordo, family, genus and 3 species. The Neoelectomycetes are species in a single genus, *Neoelecta*, which are the only members of the subdivision that form ascomata (fruiting bodies), and which specifically grow out of root tips. They may have a yeast state (ascospores bud in the asci).

**Class:** *Pneumocystidiomycetes*

The class includes single order, family, genus and 5 species and it contains compulsory animal parasite species. Pneumocystidiomycetes members also encompasses only one genus of yeasts, *Pneumocystis*, one of which causes *Pneumocystis* pneumonia in humans by developing cysts on the lung tissue. None has ascogenous hyphae giving rise to the asci.

**Subdivision:** *Saccharomycotina*

*Saccharomycotina* comprises most of the ascomycete yeasts. The members of *Saccharomycotina* reproduce by budding and they do not produce ascocarps. The subdivision includes a single class *Saccharomycetes*.

**Class:** *Saccharomycetes*

Saccharomycetes are known for being able to comprise a monophyletic lineage with a single order of about 1000 known species. These yeasts live as decomposers, feeding on dead and decaying wood, leaves, litter, and other organic matter.

**Order:** *Saccharomycetales*

There are currently 13 families recognized as belonging to *Saccharomycetales*.

**Family:** *Saccharomycetaceae*

*Saccharomycetaceae* members reproduce by budding. Species in the family have a cosmopolitan distribution, and are present in a wide variety of habitats, especially those with a plentiful supply of carbohydrate sources.

**Genus:** *Saccharomyces*

*Saccharomyces* is a genus of fungi that includes many species of yeasts. Many members of this genus are considered very important in food production. It is known as the brewer's yeast or baker's yeast. They are unicellular and saprotrophic fungi. One example is *Saccharomyces cerevisiae*, which is used in making wine, bread, beer, and for human and animal health. Other members of this genus include the wild yeast *Saccharomyces paradoxus* that is the closest relative to *S. cerevisiae*, *Saccharomyces bayanus*, used in making wine, and *Saccharomyces cerevisiae* var *boulardii*, used in medicine.

#### REFERENCES

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

Wallingford, UK: CABI.

Webster, J., & Weber, R. (2007). *Introduction to fungi*. Cambridge, UK: Cambridge University Press.

Url1.: <https://en.wikipedia.org/wiki/Ascomycota>