General characters of class Basidiomycetes

Class basidiomycetes includes those higher fungi which produce club shaped basidium (pl. basidia) in their life cycle. These basidia exogenously produce four basidiospores after meiotic division in the diploid nuclei in the basidium.

Members of this class are one of the higher fungi which are either parasites or saprophytes. Many parasitic forms are pathogenic to plants causing serious diseases like rusts, smuts, which are obligate parasites. The class comprises about 13000 species. Some of them are large and conspicuous forms with macroscopic fructifications (fruiting bodies) usually found growing abundantly on non living substrata eg. mushrooms, puff balls, stink horns, toadstools, bracket fungi.

The mycelium consists of well branched, septate hyphae with perforated cross-walls like Ascomycetes.The monokaryotic mycelia become dikaryotic in the later stage of life cycle.The dikaryotization takes place by a process known as clamp connection. The monokaryotic mycelium is known as primary mycelium and the dikaryotic ones are the secondary mycelium.A dikaryotic mycelium may arise by many ways such as :

(i) By fusion of two uninucleate cells of monokaryotic hyphae.In heterothallic species it takes place between two cells of opposite strains.

(ii) By spermatization of a primary mycelium by minute male cells or spermatia from another primary mycelium

(iii) By direct conjugation of two basidiospores or conidia formed by them.

(iv) By clamp connection,in which the two nuclei of opposite strains divide once forming four nuclei (two of + and two – strains).A pocket like outgrowth is formed in the wall, a clamp like structure. One of the upper nuclei of the upper pair passes into the clamp and is cut off from the main cell by a septum athe base of the pocket. Simultaneously one of the nuclei of the lower pair gets separated from its sister nucleus by a transverse wall. The lateral pocket then bends and gets joined with the penultimate cell by dissolution of the walls. The nucleus in the pocket moves to the penultimate cell.As a result both the terminal and the penultimate cell of the hypha possess two nuclei of opposite strains.