

Classification of Fungi

Kingdom Fungi are classified based on different modes. The different classification of fungi is as follows:

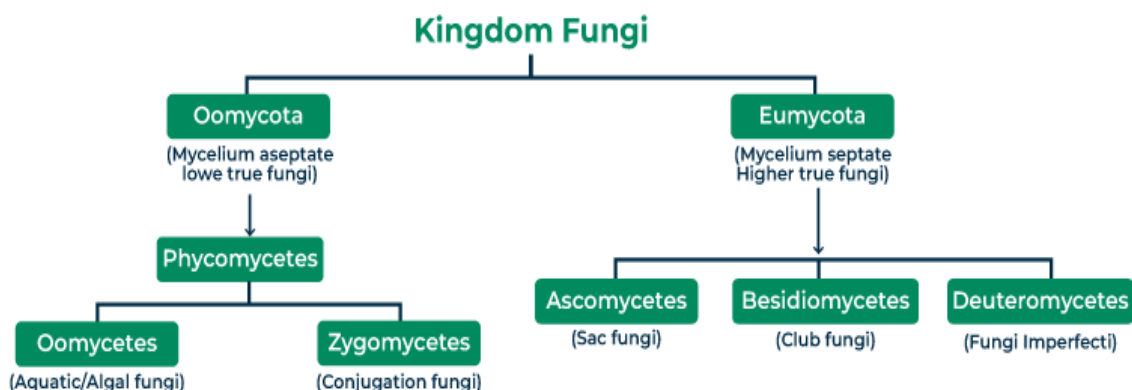
A) Based on Mode of nutrition

On the basis of nutrition, kingdom fungi can be classified into 3 groups.

- 1. Saprophytic** – The fungi obtain their nutrition by feeding on dead organic substances. Examples: *Rhizopus*, *Penicillium* and *Aspergillus*.
- 2. Parasitic** – The fungi obtain their nutrition by living on other living organisms (plants or animals) and absorb nutrients from their host. Examples: *Taphrina* and *Puccinia*.
- 3. Symbiotic** – These fungi live by having an interdependent relationship with other species in which both are mutually benefited. Examples: **Lichens and mycorrhiza**. Lichens are the symbiotic association between algae and fungi. Here both algae and fungi are mutually benefited as fungi provide shelter for algae and in reverse algae synthesis carbohydrates for fungi. Mycorrhiza is the symbiotic association present between fungi and plants. Fungi improve nutrient uptake by plants, whereas, plants provides organic molecules like sugar to the fungus.

B) Based on the Morphology of the Mycelium and the Manner of Spore Generation Formation

Kingdom fungi is separated into numerous classes. The Kingdom Fungi classification chart is given below:



1. Phycomycetes

These are also known as lower true fungi. They are further divided into two types- **Oomycetes** and **Zygomycetes**.

- These are found as obligatory parasites on plants, decaying wood in moist environments, and in aquatic settings.
- The **mycelium** is **coenocytic** and **aseptate**.
- If the gametes have similar morphologies, they are known as **Isogamous**, and if they have different ones, they are known as **Anisogamous**. Asexual reproduction occurs through **zoospores or aplanospores**.

Examples - Rhizopus and Mucor.

2. Deuteromycetes

This class of fungus called **Deuteromycetes** encompasses all those fungi whose sexual stage is either unknown or nonexistent. Some of its characteristics are:

- The majority of deuteromycetes members may actually be ascomycetes, in which sexual reproduction is either absent or has not yet been identified.
- Some Deuteromycetes resemble yeast-like unicellular organisms.
- **Conidia and other forms of spores** frequently serve as the means of asexual reproduction.
- Typically, the mycelium is septate and branched.
- Most of the members are decomposers and some of them are parasites.
- There are no clamp connections, which are present in basidiomycetes.

Examples - *Trichoderma*.

3. Ascomycetes

Ascomycetes are considered a separate class of fungi based on their special reproductive structure called Asci. Some of its characteristics are:

- Ascomycetes are often referred to as **sac-fungi**.
- They are typically seen in multicellular form; unicellular form is uncommon.
- The mycelium of ascomycetes is branched and septate.
- They may be saprophytic, parasitic, decomposers, coprophilous, or any of these.
- Ascospore is the name for sexual spores. Conidiospores are used in asexual reproduction.

Examples - *Aspergillus*, *Claviceps*, *Neurospora*, *Saccharomyces*

4. Basidiomycetes

Basidiomycetes are often considered the most advanced and commonly encountered fungi due to their large and conspicuous fruiting bodies. Some of its characteristics are:

- These include mushrooms (gill fungi), toadstools, puffballs, and bracket fungi, among others.

- Mycelium is **branched and septate**.
- Vegetative reproduction via **fragmentation** occurs frequently.
- **Plasmogamy** occurs as a result of fusion of vegetative or somatic cells of two different strains. This results in the production of basidium.
- **Four basidiospores** are produced inside the basidium as a result of **Karyogamy and Meiosis**.
- The basidia get arranged in fruiting bodies called basidiocarps.
- Among the best wood decomposers are basidiomycetes. Basidiomycetes are able to outcompete most insects in the decay of hardwoods and woody tree parts. Basidiomycetes have the capacity to break down cellulose and lignin.

Examples- *Agaricus*.