

Sexual Reproduction in fungi

Sexual reproduction involves the formation and fusion of gametes. Sexual reproduction found in all groups of fungi except deuteromycetes or fungi imperfecti. Sexual reproduction has three distinct phases i.e. plasmogamy (protoplasmic fusion), karyogamy (fusion of nuclei) and meiosis (reduction division of zygote). The various methods of sexual reproduction in fungi are as follows:

1. Planogametic copulation: This is simplest type of sexual reproduction. In this process fusion of two gametes of opposite sex or strains takes place where one or both of the fusing gametes are motile (flagellated). It results in the formation of a diploid zygote. This process is usually of these types:

✓ **Isogamy:** In this process fusing gametes are morphologically similar and motile but physiologically dissimilar. These gametes are produced by different parents, e.g. *Synchytrium*.

✓ **Heterogamy:** When the fusing gametes are morphologically as well as physiologically different, the process is known as heterogamy.

Heterogamous reproduction is of two types: **anisogamy** and **oogamy**.

Anisogamy consists of the fusion of two motile gametes where the male gamete is small and more active than the female gamete, e.g., *Allomyces*.

In oogamy the motile male gamete (antherozoid) fuses with the large, non-motile female gamete (egg or ovum) e.g., *Synchytrium* etc.

2. Gametangial contact: In this process two gametangia of opposite sex come in contact with one another. The male gametangium (antheridium) transfer male nucleus or gamete into the female gametangium (oogonium) either through a pore at the point of contact or through a fertilization tube, e.g., *Phytophthora*, *Albugo*, *Pythium* etc.

3. Gametangial copulation: In involves the fusion of entire contents of two gametangia to form a common cell called zygote or zygospore, e.g., *Mucor*, *Rhizopus*.

4. Spermatization: Some fungi produce many minute, spore-like, single-celled structures called spermatia (nonmotile gametes). These structures are transferred through agencies like water, wind and insects to either special receptive hyphae or trichogyne of ascogonium. The contents migrate into receptive structure. Thus dikaryotic condition is established, e.g. *Puccinia*.

5. Somatogamy: This takes place in fungi where formation of gametes is absent. In such fungi,

anastomoses takes place between hyphae and their somatic cells fuse to produce dikaryotic cells, e.g, *Agaricus*, *Peniophora* etc.

Some Examples of Sexual Spores

✓ Ascospore:

- It is usually single celled produced in a sac called ascus (plural;asci) and usually there are 4 - 8 ascospore in an ascus but the number may vary from species to species
- The ascospore are usually arranged in a linear order. In some case ascospores are long, narrow and are arranged in parallel order.

✓ Basidiospore:

- It is a reproductive spore produced by basidiomycetes.
- This single celled spores are born in a club shaped structure called basidium
- These basidiospore aerves as main air dispersal unit for the fungi.

✓ Zygospor:

- Zygospor are thick walled spores formed when two sexually compatible hyphae or gametangia of certain fungi fuse together.
- In suitable condition, zygospor germinates to produce a single vertical hyphae which forms a aporangium and releases its spores

✓ Oospore:

- These are formed within a special female structure called Oogonium.
- Fertilization of egg by male gamete in female sex organ give rise to oospoes.
- There are one or more oospores in each oogonium.

Examples of Sexual Spores in Fungi

