

Slime Moulds

General Characteristics:

- (i) They lack chlorophyll.
- (ii) They are surrounded by the plasma membrane only; vegetative phase lacks cell-wall. However, the spores have the cellulose cell walls.
- (iii) At one stage of the life cycle they have amoeboid structure (i.e., vegetative body plasmodial).
- (iv) The slime moulds live usually amongst decaying vegetation. They commonly occur on lawns and moist fields.
- (v) They exhibit wide range of colouration.
- (vi) They are saprophytes and have phagotrophic mode of nutrition. Parasitic forms are not known.
- (vii) Both asexual and sexual modes of reproduction are present. They produce spores within sporangia. A spore possesses a cell wall of cellulose.
- (viii) The slime moulds resemble both protozoa and the true fungi. They are like protozoa in their amoeboid plasmodial stage and similar to true fungi in abundant spore formation.

Types of Slime Moulds:

Slime moulds are of two types – acellular and cellular.

1. Acellular Slime Moulds (= Plasmodial Slime Moulds): The acellular slime moulds are commonly found on dead and decaying leaves, twigs, logs of wood and the other decaying vegetable matter. They prefer to grow in damp places rich in decaying vegetable matter in the forests a little after and during the rainy seasons

Somatic diploid phase is wall-less multinucleate protoplasm called Plasmodium. It may be coloured variously. Plasmodium creeps over the surface of substratum with the help of pseudopodia.

The chief mode of nutrition of Plasmodium is saprotrophic, absorbing the organic food from the decaying organic matter (substratum of Plasmodium). Plasmodium also feeds on bacteria, protozoa, spores of fungi and other microorganisms through ingestion and engulfing (i.e., phagotrophic or holozoic nutrition).

2. Cellular Slime Moulds: The cellular slime moulds occur in all humus-containing upper layers of damp soil. These are uninucleate, haploid and amoeba-like cells. Myxamoebae are without cell

wall. They are covered by plasma membrane. They move by amoeboid movements. Myxamoebae feed on bacteria and other microorganisms through ingestion (phagotrophic or holotrophic nutrition). They grow and divide to form a large population of individuals. Under unfavourable conditions, a myxamoeba secretes a rigid cellulose wall to form the microcysts. When the food supply is exhausted, the amoeboid cells get aggregated without any fusion. The stimulus for the aggregation process is due to release of cyclic 3', 5' adenosine monophosphate (cyclic AMP) from the amoeboid cells. This aggregated mass of cells is called pseudoplasmodium. It is a sort of community association. Because of this reason, cellular slime moulds are called the communal slime moulds.

3. Slime Nets: A third group, the **Labyrinthulomycota** or slime nets, are also called "slime molds", but appear to be more closely related to the Chromista, and not relatives of the other "slime mold" groups.

Economic Importance of Slime Moulds:

- (i) The slime moulds cause the decay and decomposition of the organic matter in the soil.
- (ii) They creep over the ornamental plants and make them look ugly.
- (iii) Their attractive colours are of artistic value.
- (iv) The Plasmodia of slime moulds are an excellent material for the study of structure and physiology of protoplasm.