ALBUGO

Systematic position

Division	—	Eumycota
Subdivision	—	
Mastigomycotina		
Class	—	Oomycetes
Order	—	Pernosporales
Family	—	Albuginaceae
Genus	—	*Albugo*

Somatic structure

The mycelium is well developed, branched, intercellular, aseptate and coenocytic. The hyphal wall consists of cellulose. The protoplasm of the hyphae is granular and contains many nuclei, oil globules and glycogen.

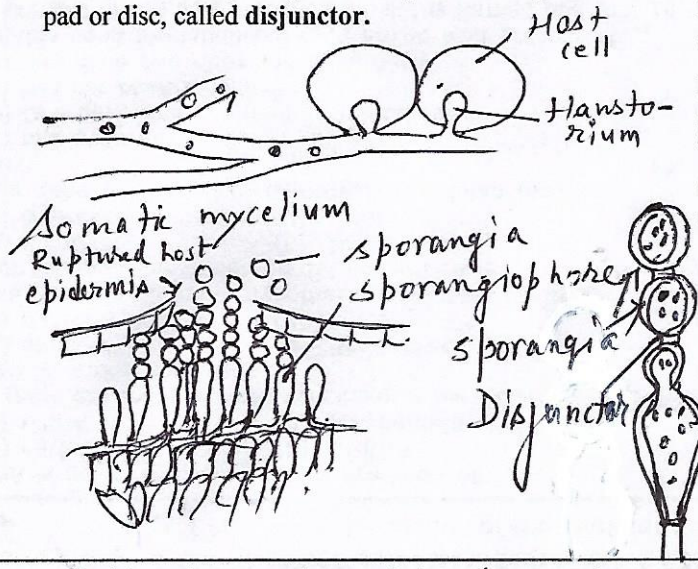
From the intercellular mycelium develop many spherical or knobs like haustoria, which penetrate into the host cell and absorb the food.

Asexual reproduction

After a certain maturity the intercellular mycelium forms palisade of hyphae below the host epidermis. The tips of these hyphae develop into short, erect, thick walled and club shaped structure called **sporangiophores**. Many such sporangiophores lie perpendicular to the host surface.

The apical end of the sporangiophore is multinucleate, thin walled and contains dense cytoplasm. It enlarges or swells. A deep constriction appears below the swollen end which results in the formation of a multinucleate and spherical or oval sporangium.

In the same manner another sporangium is formed by the tip of the sporangiophore. The process is repeated several times and a chain of sporangium at the base and oldest at the top of the chain. In between the successive sporangia develop a mucilaginous pad or disc, called **disjunctor.**



The pressure of the developing sporangia raises the epidermis of the host and finally ruptures it. The sporangia are visible on the host surface as a white powdery mass.

The sporangia are smooth, colourless and multinucleate.

Sporangia are dispersed from the white rusty pustules or blisters of the pathogen, by the shrinking and drying of the mucilaginous disc.

The sporangia are blown away by wind or washed away by the rain water. After landing on a suitable host the sporangia germinates within a few hours under suitable conditions.

Under moist condition and at low temperature, the sporangium behaves as a zoosporangium. It absorbs water and swells. Its multinucleate protoplast divides to form polyhedral daughter protoplasts, each of which ultimately develops into a zoospore. A papilla also protrudes from the sporangium. The papilla enlarges and the young 4-12 zoospores are released in a sessile vesicle. Each zoospore is a biflagellate structure. Of the two flagella, one is short and of tinsel type, whereas the other is large and of whiplash type.

The released zoospores settle on some suitable host, become deflagellated, and each of them secretes a wall. The encysted zoospore forms a germ tube, which penetrates the host epidermis and develops into a fresh mycelium.

Under dry condition and at high temperature the sporangium germinates directly into a germ tube, without forming any zoospore. This is uncommon in *Albugo.*

Sexual Reproduction

The sexual reproduction is **oogamous**. The sex organs (antheridia and oogonia) develop quite deep into the tissues of the stem or petiole. Both the sex organs develop near each other.

Each inflated hyphal tip is multinucleate and gets separated by a cross wall just below the inflation. The separated swollen portion represented by a cross wall just below the inflation. The separated swollen portion represents the oogonia.