Benha University	**3rd year (Bot. & Chem.)**
Faculty of Science	**Jan 2014**
Botany Department	**Time: 1 hours**

Mycology

Answer the following questions

1- Write what do you know about 2 only of the following:

a- General characteristics of Ascomycetes

- The mycelium typically branced and septate. The septum is perforated with central pore. Each cell is either uni- or multi- nucleate.
- Complete absence of motile cells.
- Asexual reproduction by means of conidia.
- The production of ascospores (sexual units) in small specialized, thin-walled, sac-like called the asci (singular ascus)
- Each ascus with a definite number of ascospores which is usually eight.
- Production ,in most species, a definite, multicellular fruiting body,(the ascocarp).

b- General characteristics of Basidiomycetes

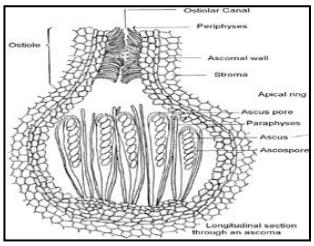
- The vegetative phase was a developed filamentous septate mycelium.
- Complete absence of motile cells in the life cycle.
- The development of secondary mycelium in life cycle.
- Asexual reproduction by means of conidia.
- Presence of basidiospores (sexual units) produced by the basidium.
- The basidia are generally enclosed in the spore fruit called the basidiocarp.

c- Types of Ascocarp(Fruiting bodies of Ascomycetes)

- **Perithecium**

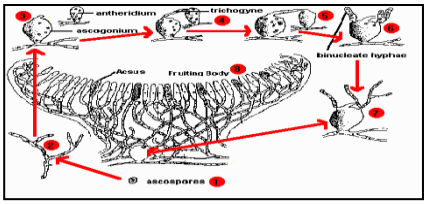
It is a small rounded or flask-shaped ascocarp. it has an apical pore or opening the ostiole. Through this opening the ascospores escape. The hymenium lines the inner surface of the cavity of the perithecium either throughout or only

at the base. It is enclosed by the peridium. The thin-walled asci are intermingled with the paraphyses. The ostiole region also develops sterile hair the paraphyses.



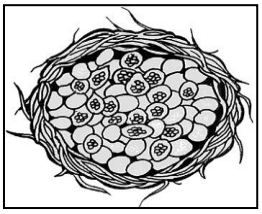
- **Apothecium**

A cup shaped or saucer-shaped structure, inside which are numerous, closely-packed, cylindrical or cup-shaped asci. The term signifies that it is not a true receptacle, since it is wide open.



- **Cleistothecium**

It is a rounded cleistothecium like structure without an ostiole. The Asci are globose or broadly oval usually scattered at different levels within the peridium. The ascospore escape by the decay or irregular of the wall of the asci and spore fruit.

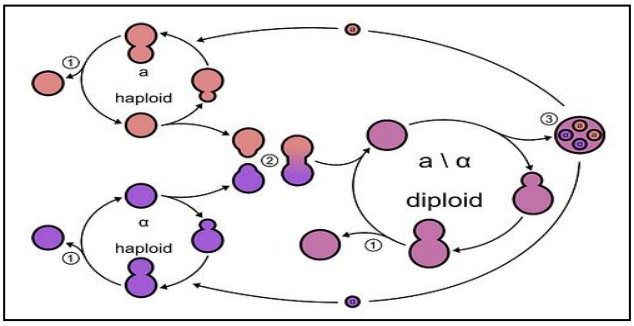


2- Draw only three of the following:

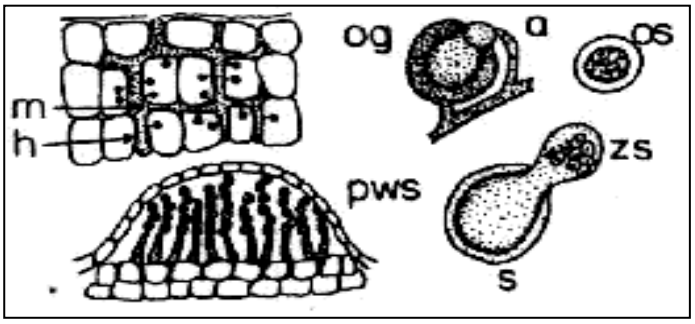
a- Life cycle of Yeast or *Albugo*

- **Yeast**

Yeasts have asexual and sexual reproductive cycles. The most common mode of vegetative growth in yeast is asexual reproduction by budding. Here a small bud, or daughter cell, is formed on the parent cell. The nucleus of the parent cell splits into a daughter nucleus and migrates into the daughter cell. The bud continues to grow until it separates from the parent cell, forming a new cell. Some yeasts, including *Schizosaccharomyces pombe*, reproduce by binary fission instead of budding.

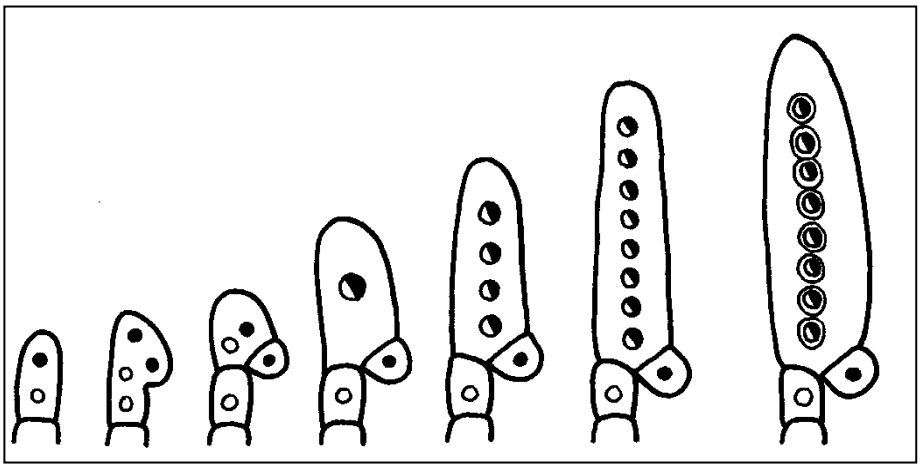


- ***Albugo***



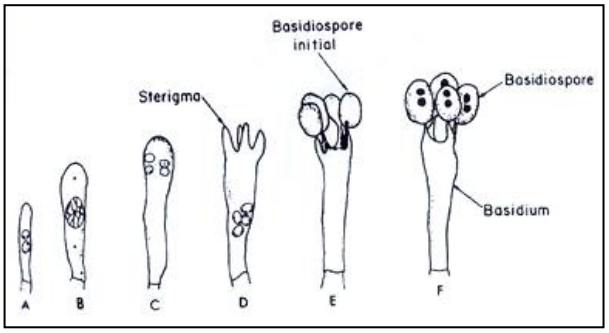
b- Ascus formation

Ascus formation occurs on the same mycelia that produce conidia. They are preceded by the formation of multinucleate gametangia called "antheridia" and "ascogonia". The male nuclei of the antheridium pass into the ascogonium via a tubular outgrowth of the ascogonium known as the trichogyne. "Plasmogamy", or the fusion of the two cytoplasms, has now taken place. The male nuclei then pair with the genetically different female nuclei within the common cytoplasm but do not fuse. Hyphae now begin to grow out of the ascogonium. As the hyphae develop, pairs of nuclei migrate into them and simultaneous mitotic divisions occur in the hyphae and ascogonium. Cell division in the developing hyphae occurs in such ways that the resulting cells are "dikaryotic" .



c- Basidium formation

It is a terminal cell of binucleate hypha and is separated from the rest of the hypha by a septum over which a clamp connection is formed .the terminal cell gradually enlarge and the two nuclei soon fuse to form diploid nuclei . from the apex of enlarging basidium 4 protrusions arise then expand terminally and a nucleus passes into each of these protrusions. The tip of protrusion containing the haploid nucleus gradually enlarges to form a basidiospore.

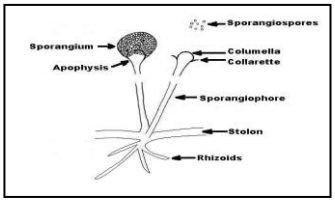


d- Genera related to family Mucoraceae

Sporangia and columellae always present eg.

- *Absidia :* Mycelium composed of richly branched Stolon with richly branched rhizoids, Sporangiophores straight often in groups of 2-5, sporangium pyriform furnished with an apophysis

- *Rhizopus*: Stolon arched, richly branched rhizoids occur at the nodes of the Stolon. Opposite rhizoids arises groups of Spornagiophores



- *Circinella:* Sporangiophore branched, side branches strongly curved.

- *Mucor*: Sporangiophore arises singly from the mycelium either unbranched or branched sympodially or monopodially, rizoids are never present.