

**King Saud University
Department of Botany
and Microbiology**



Fungal Structure

362 MIC

Amal Alghamdi

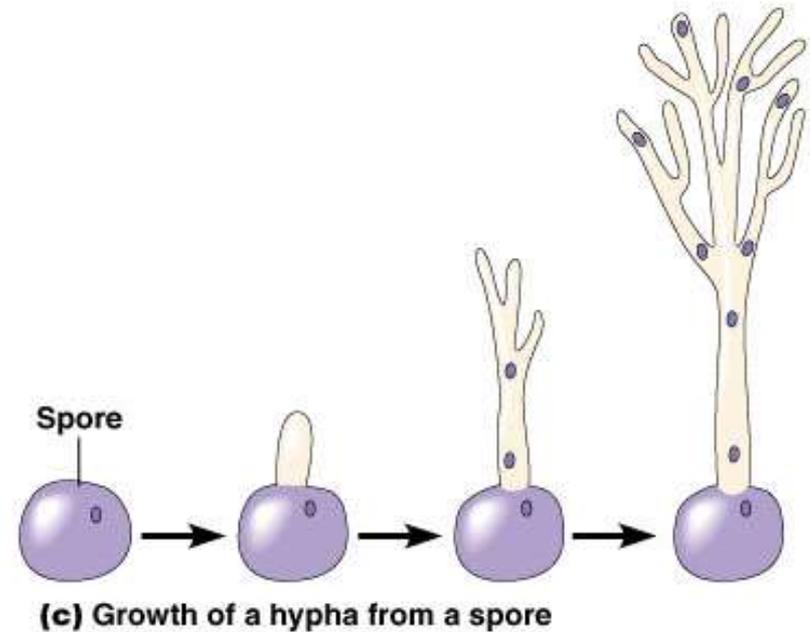
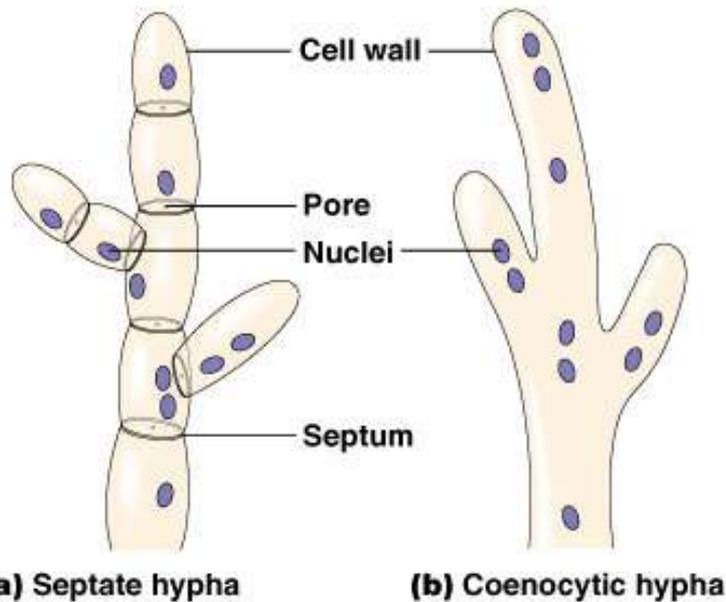
Fungi

- Eukaryotes
- Heterotrophic
- Their cell wall contain chitin, a polymer of acetyl glucosamine.
- Example: yeast, molds, mushrooms, etc...
- The study of fungi: mycology.

Vegetative Structure

- The thallus (body) of a mold and fleshy fungus consists of long filaments of cells joined together. These filaments are called *hyphae* (singular *hypha*).
- Most of the molds contain cross-walled called septa (singular: septum). Which separate them; **Hyphae** that has this is called **septate hyphae**.
- Other classes of fungi have hyphae that contain no septa and appear as long continuous cells with many nuclei. These are called **coenocytic hyphae**.

Septate, Coenocytic, and Hyphae growth

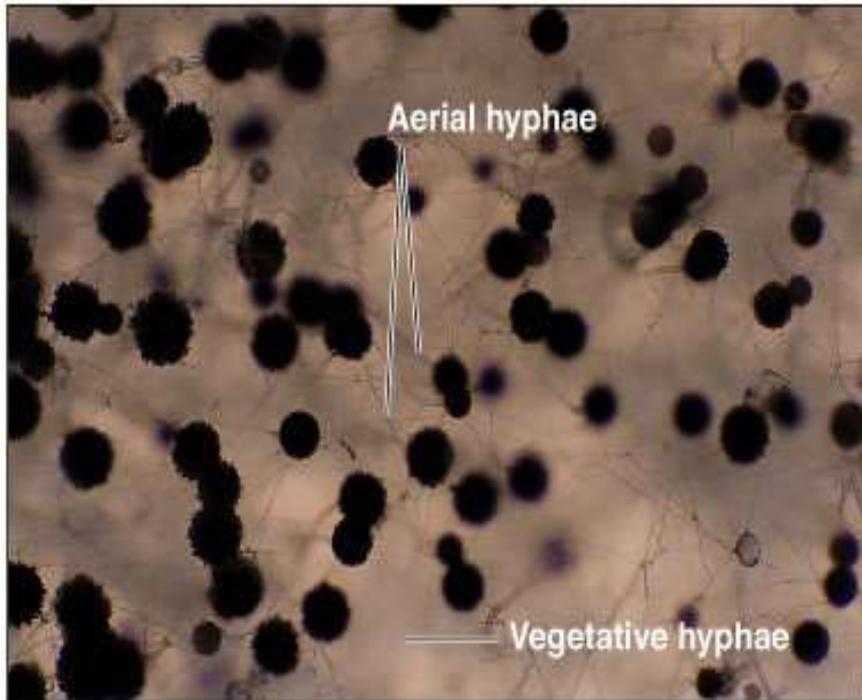


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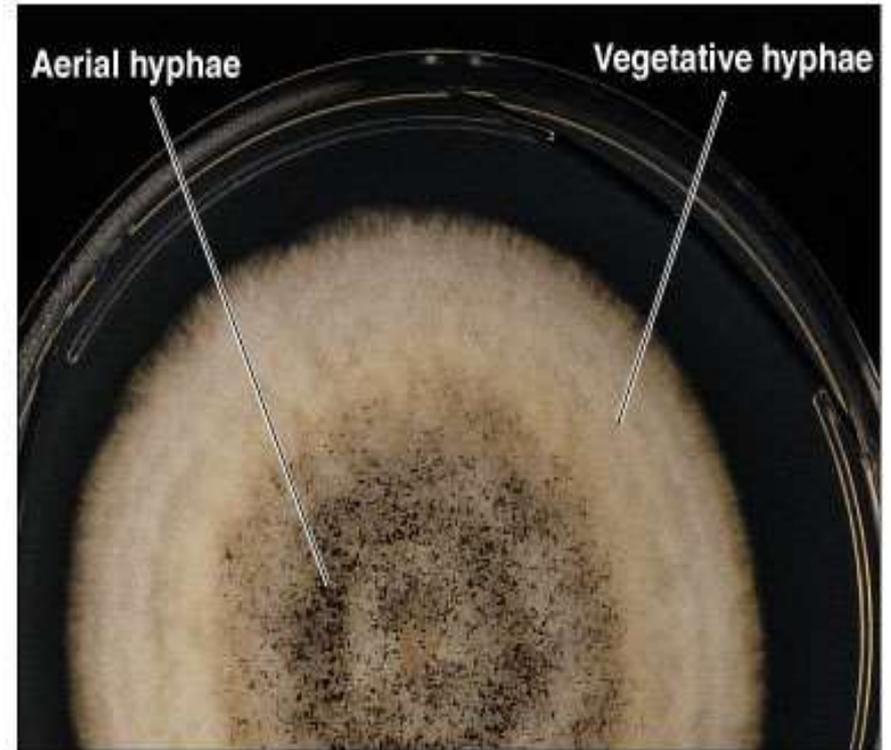
Hypha

- Hypha that obtains nutrients are called the vegetative hypha,
- hypha section that involved in the reproduction is the reproductive or **aerial hypha**.
- hypha will grow and form filamentous mass called **mycelium**.

Aerial and Vegetative Hyphae



(a) *Aspergillus niger*



(b) *A. niger* on agar

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Fungal Spores

- Asexual spores are formed by the hyphae of one organism. Once they germinate they become organisms that are genetically identical to the parent.

Ex: arthrospore, blastospore, conidiospore, & sporangiospore

- Sexual spores are result from the fusion of nuclei from two opposite mating strains of the same species of fungus.

Ex: zygospore, oospore, ascospore, & basidiospore

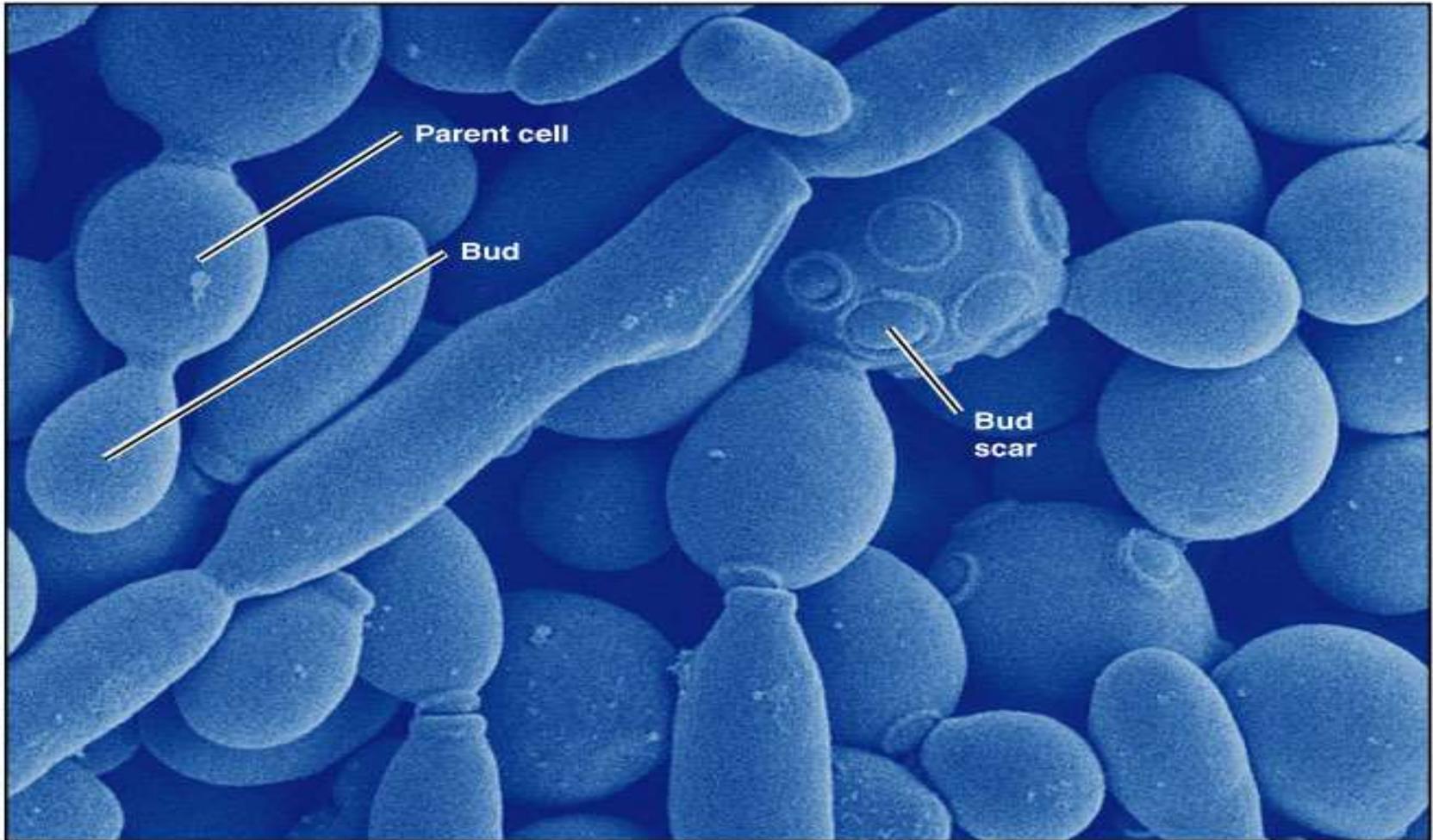
Yeast– unicellular fungi

- Nonfilamentous
- Unicellular fungi
- Typically spherical or oval

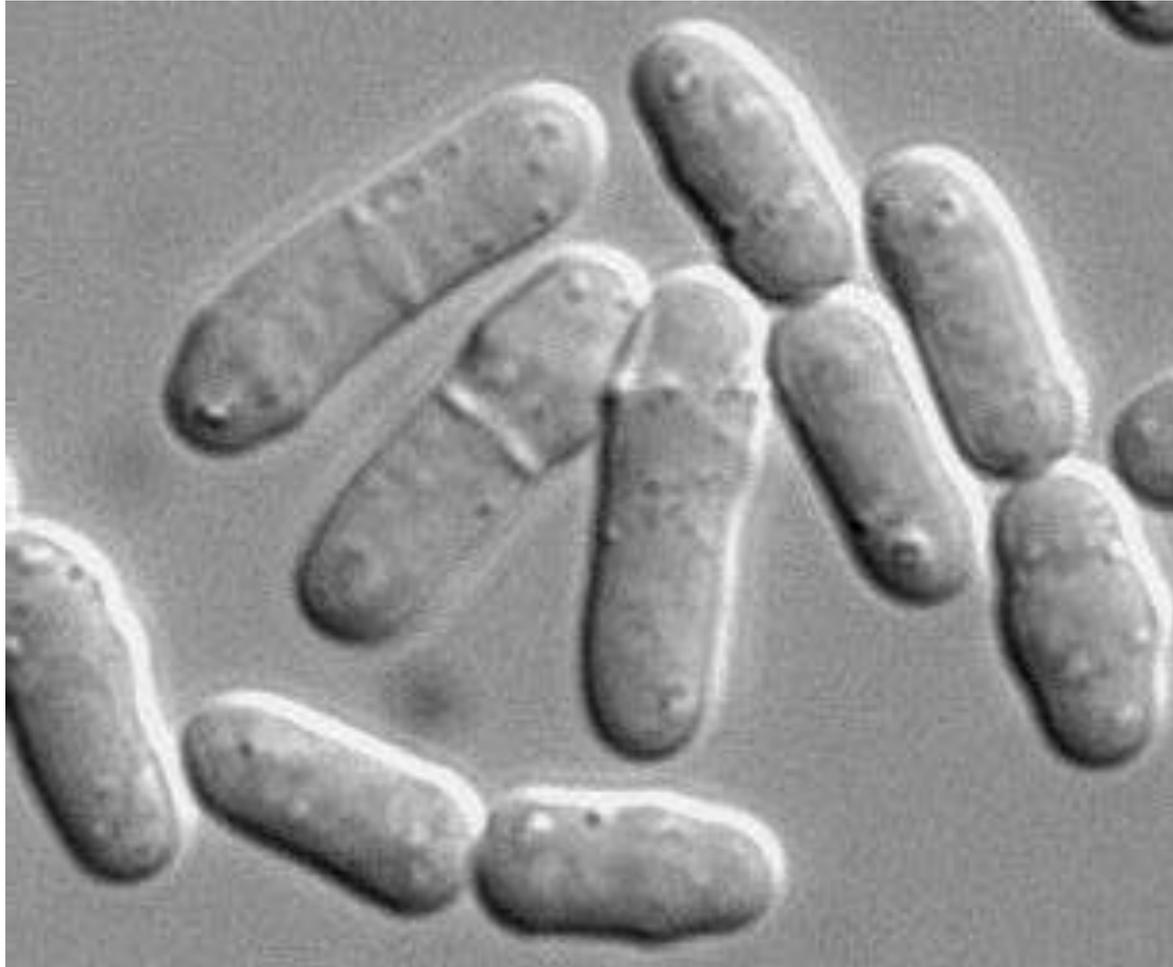
Yeast reproduction

- Budding Yeast ---> divide unevenly
Saccharomyces cerevisiae
- Pseudohypha ---> Buds that fail to detach themselves and form a short chain of cells
Candida albicans
- Fission yeast--> Divide evenly to produce two new cells during division
Schizosaccharomyces

Budding yeast



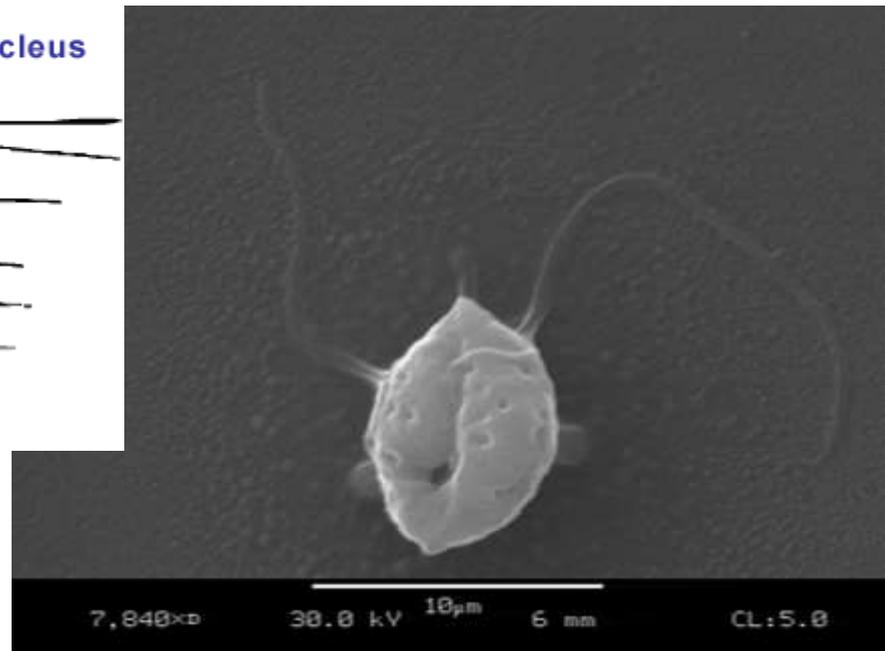
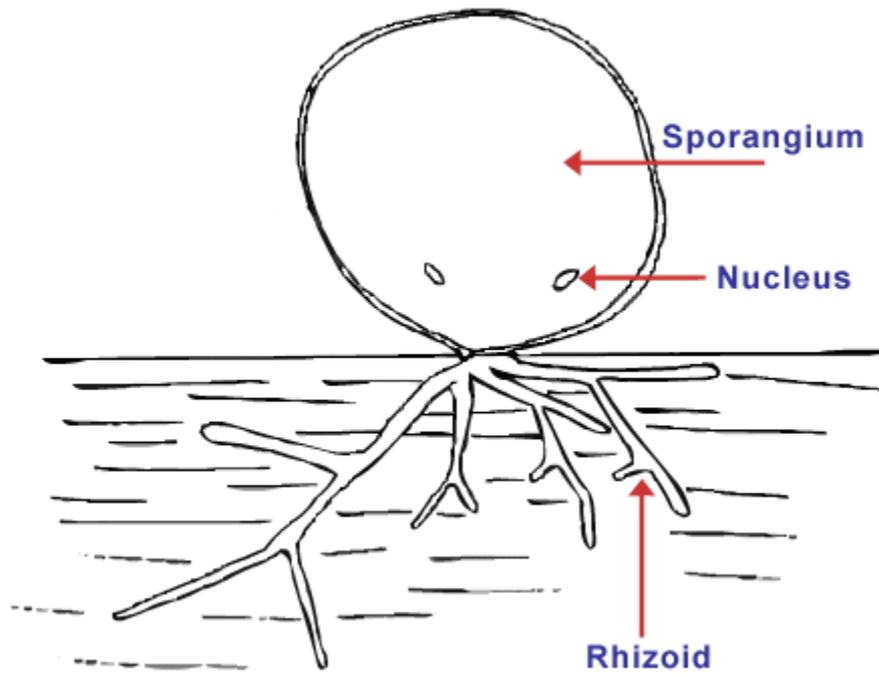
Schizosaccharomyces



Chytridiomycota

- Form zoospore : flagellated and motile, asexual spore develop in zoosporangium
- Sexual spore : Oospore

Zoospore-Chytridiomycota

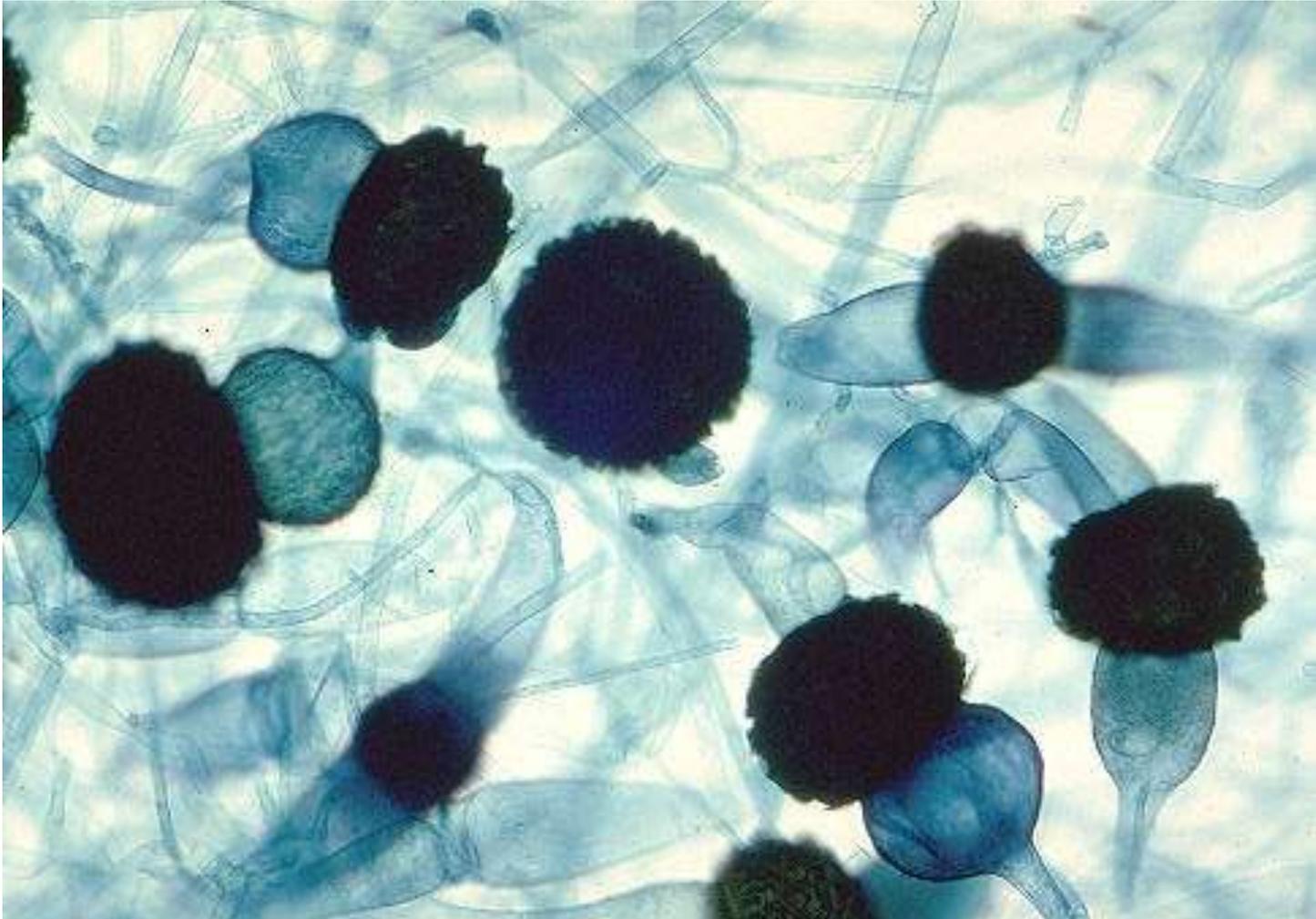


Zygomycota

- Non septate hyphae
- Produce asexual spores Sporangiospores in the sacs called sporangia
- Sexual spores : Zygosporangium
- Example : *Rhizopus stolonifer*

Mucor

zigospore



Ascomycota

- Produce sexual spore the ascospore formed within sacs called ascus.
- Ascus in macroscopic structures called ascocarp.
- Asexual spores : conidiospore
- Ex: *Claviceps purpurea* → ergot disease
Morchella esculenta
Aspergillus

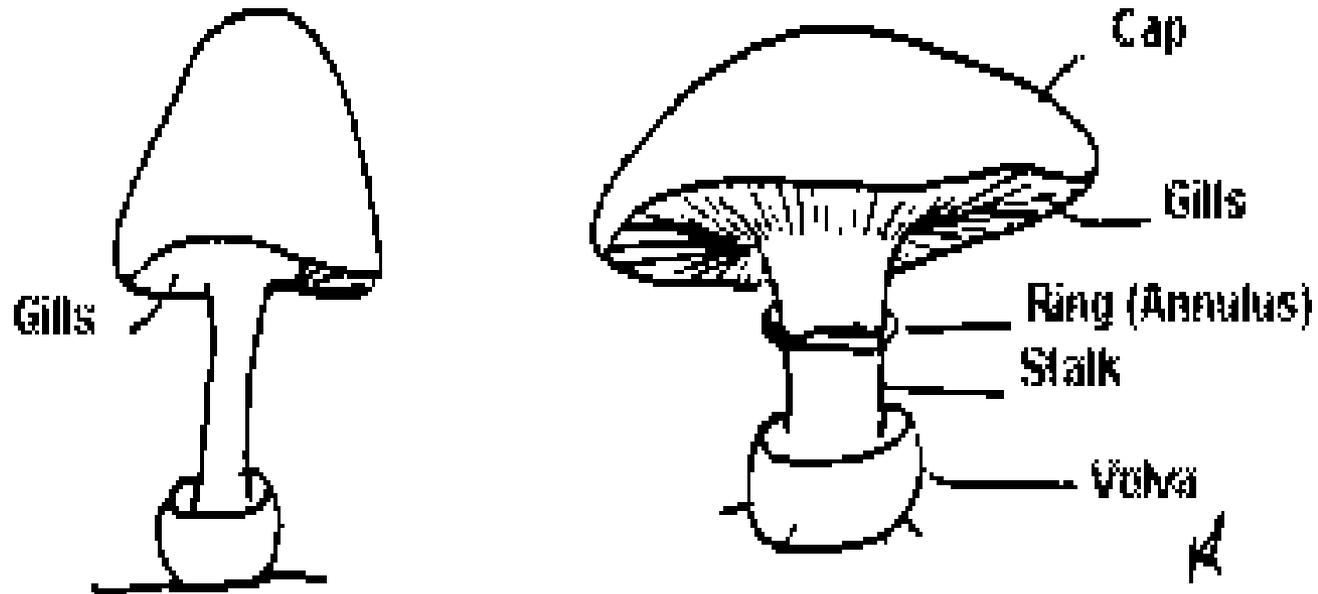
Morchella esculenta



Basidiomycota

- Most of the members are mushrooms
- Has basidiocaprs
- Spore bearing structures called basidia
- Sexual spores : basidiospore
- Asexual spores : conidiospore

basidiocarp



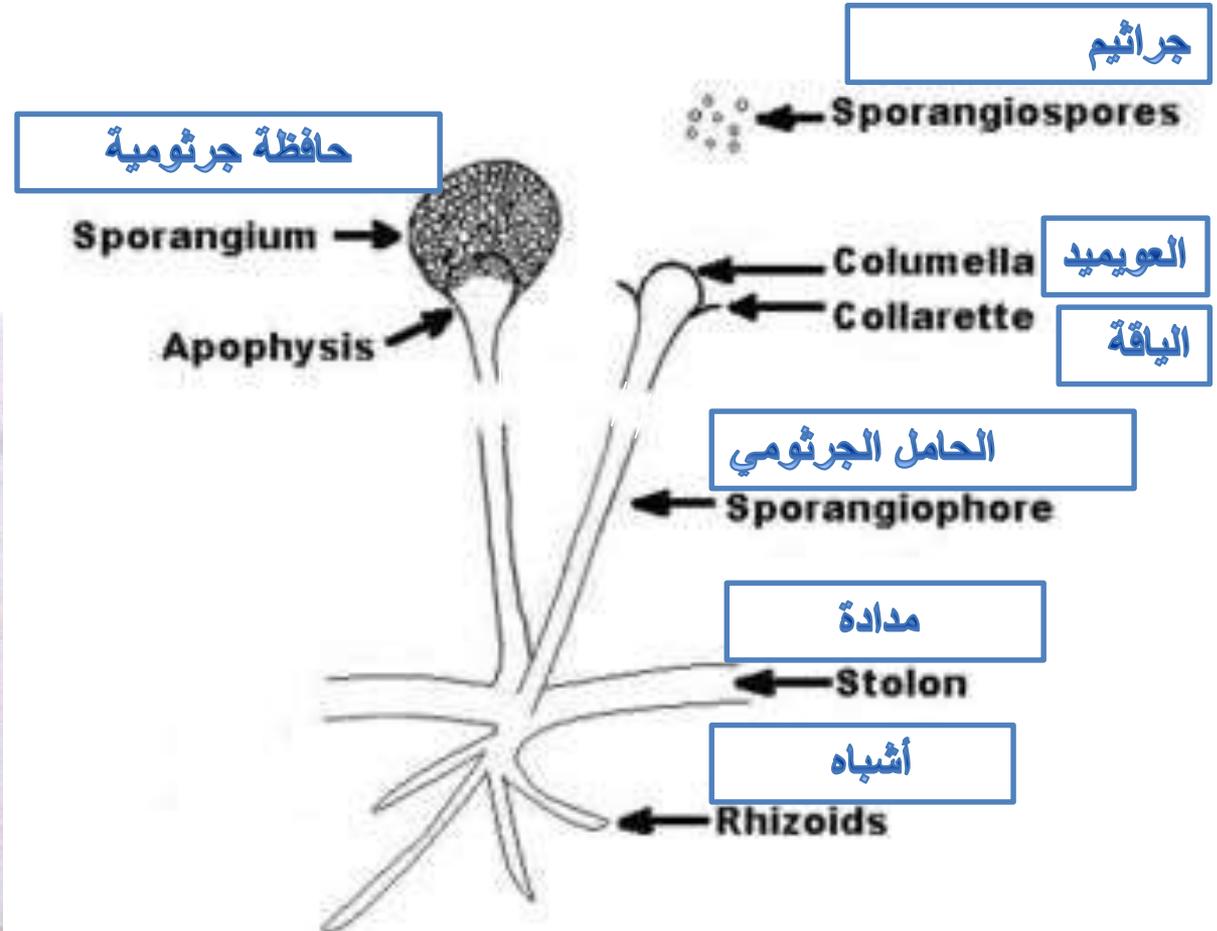
Amanita muscaria



Agaricus langei



فطر *Rhizopus*

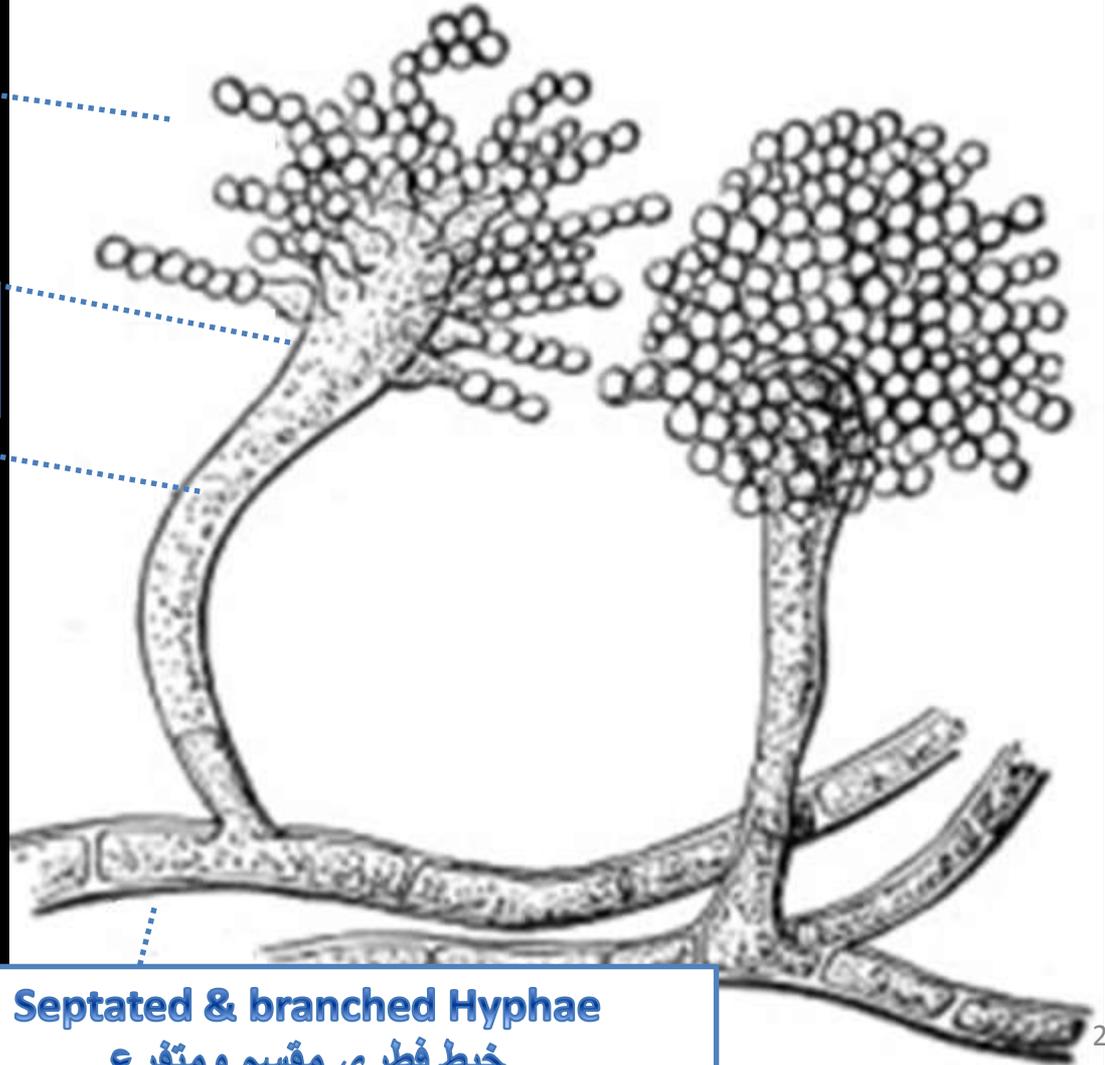


فطر *Aspergillus*

سلاسل من الجراثيم
الكونيدية

Vesicle
الحويصلة

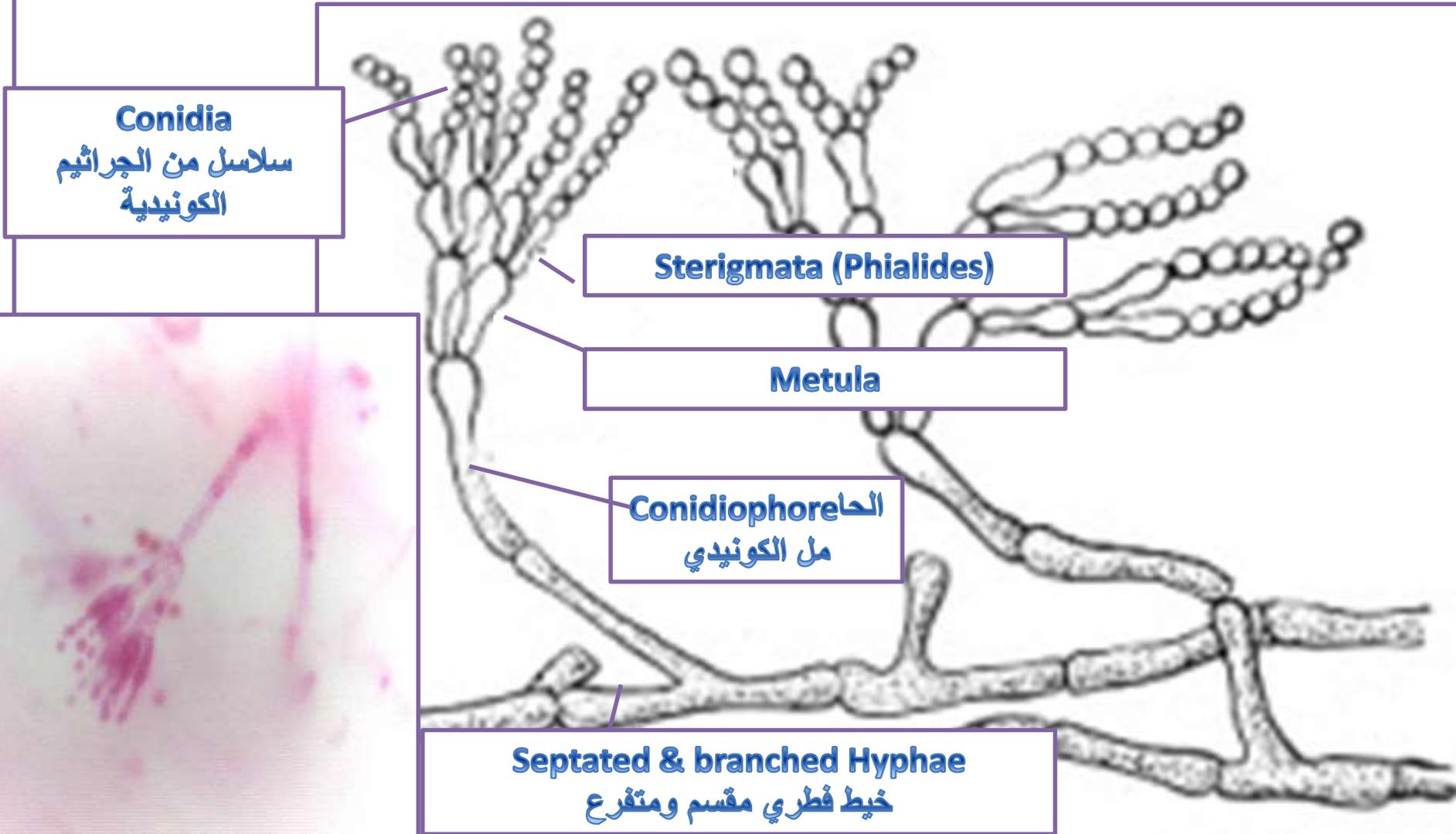
Conidiophore
الحامل الكونيدي



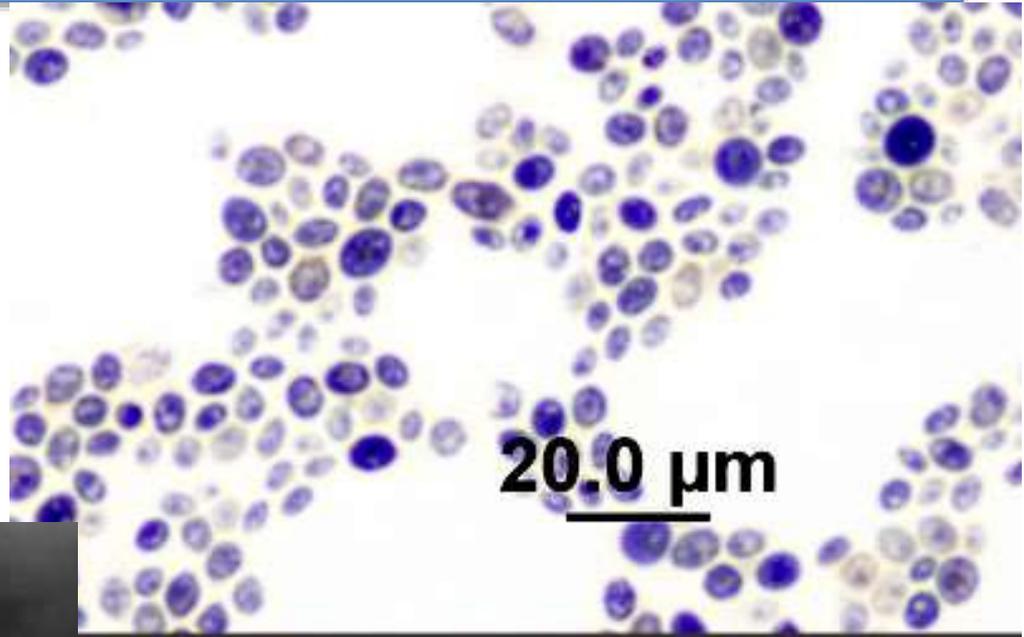
Septated & branched Hyphae
خيط فطري مقسم ومتفرع



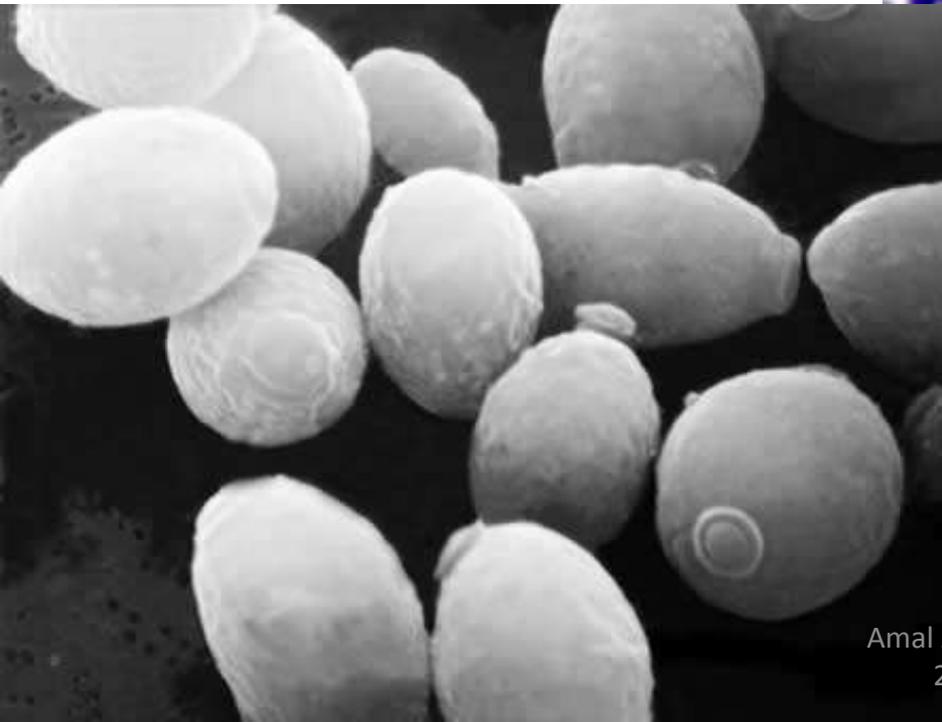
فطر *Penicillium*



Saccharomyces فطر



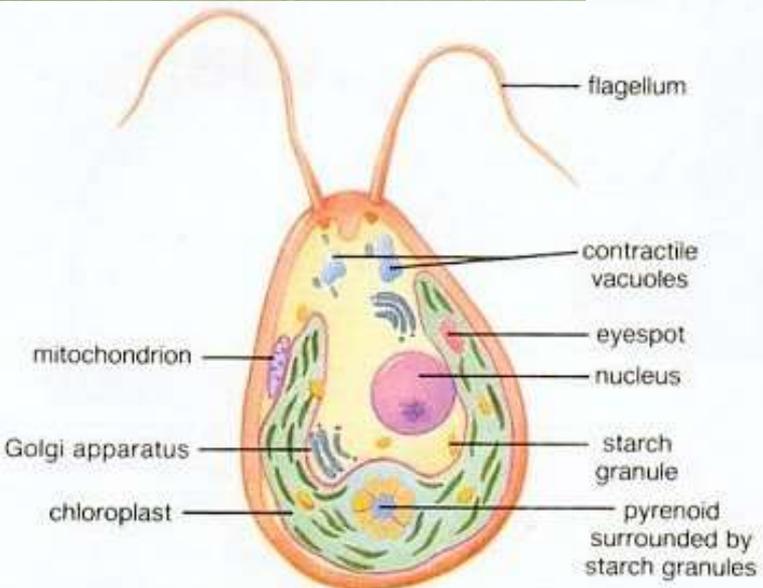
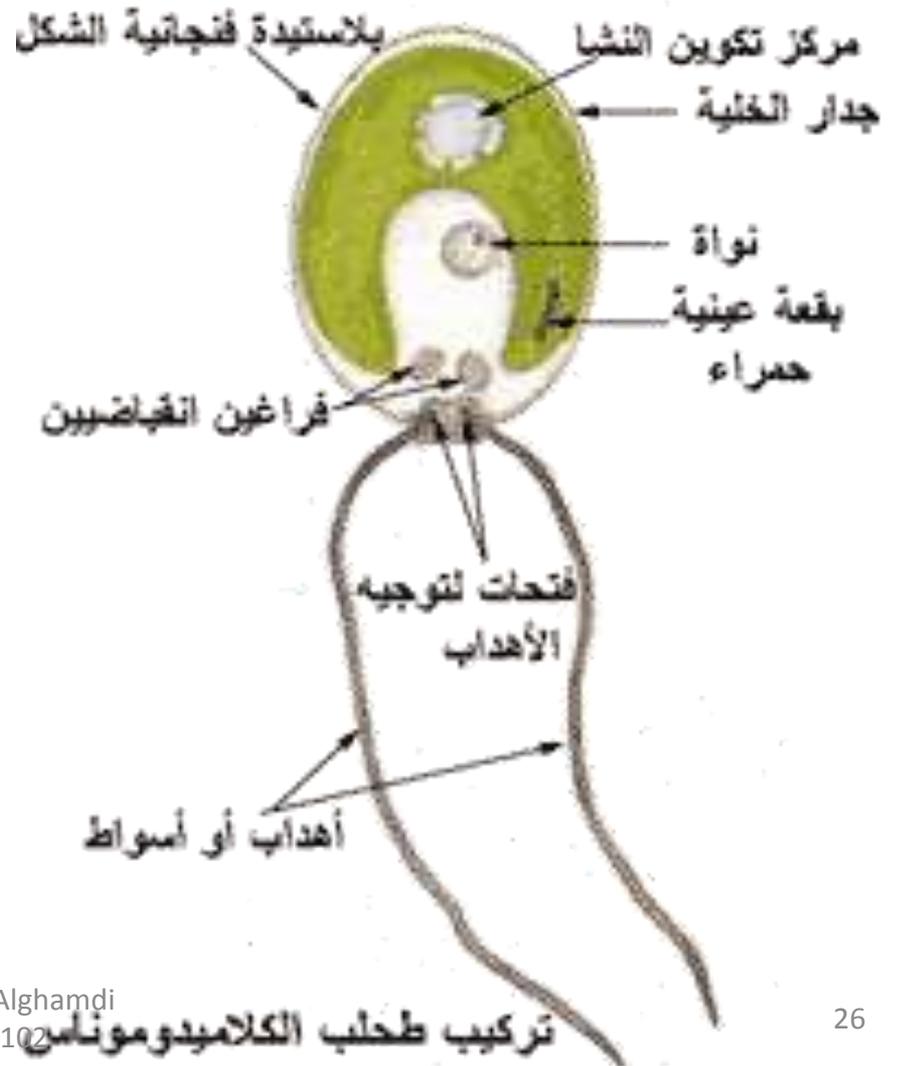
Saccharomyces cerevesiae



Example of unicellular motile alge

طحلب

Chlamydomonas

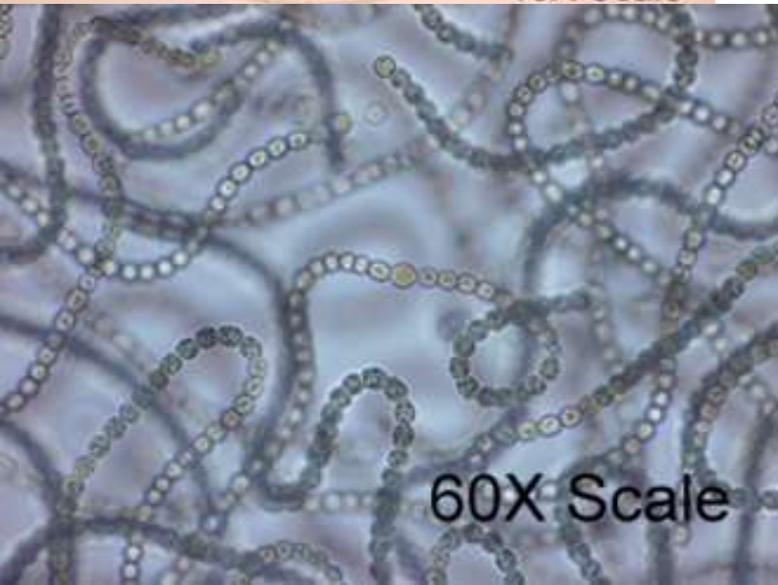
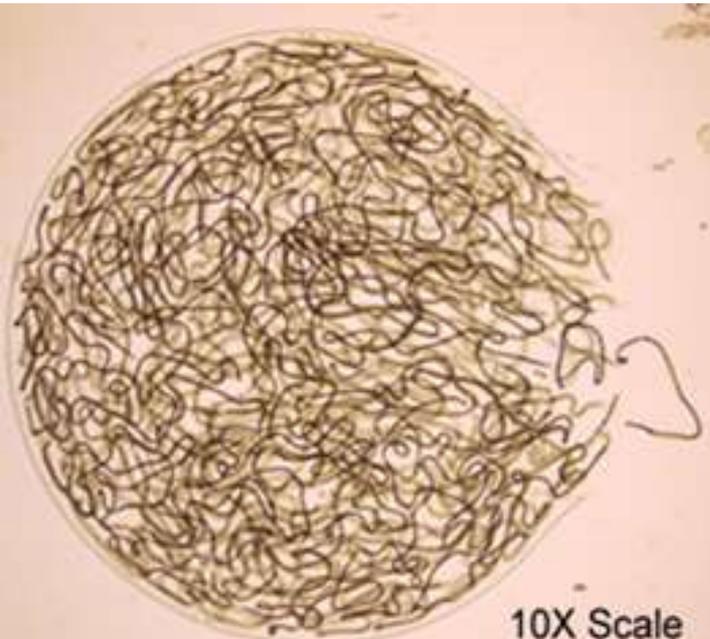


Amal Alghamdi

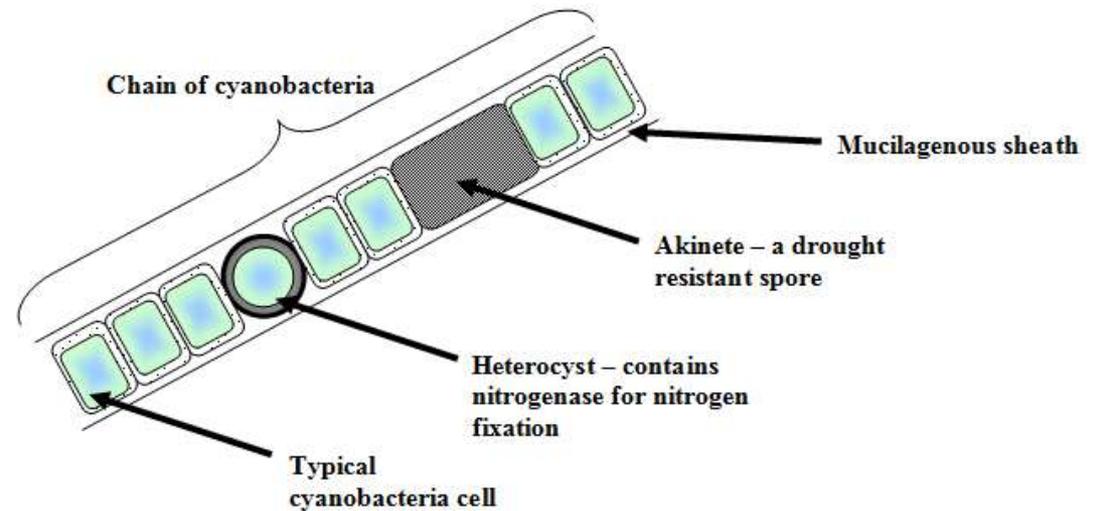
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تركيب طحلب الكلاميدوموناس

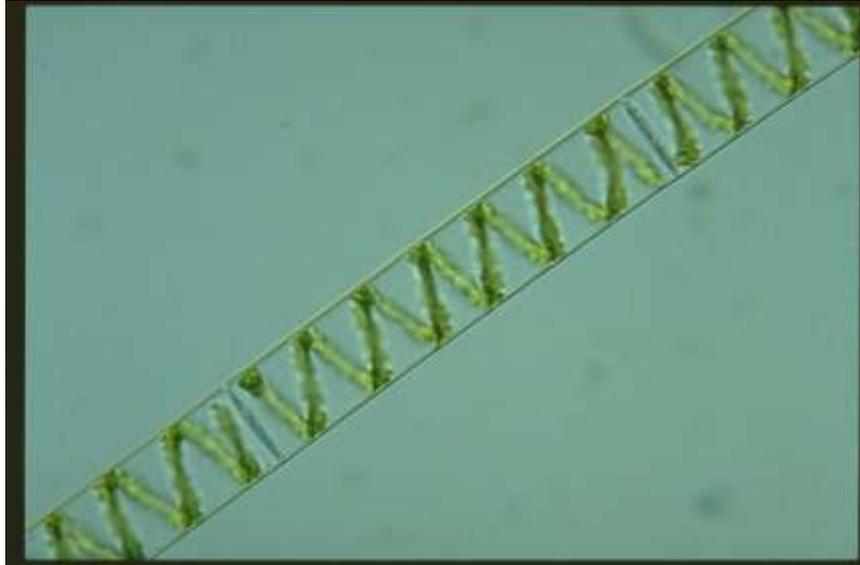
1- Cyanophyta



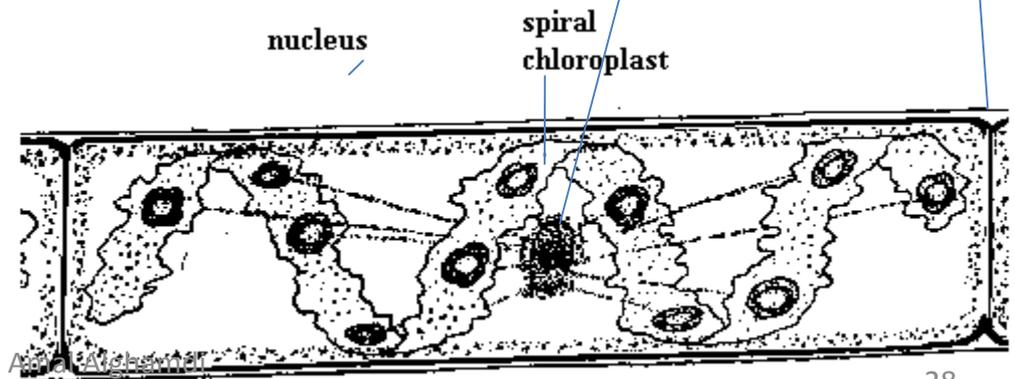
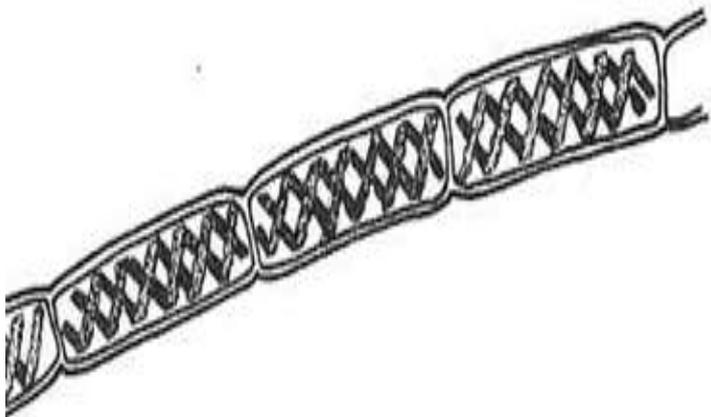
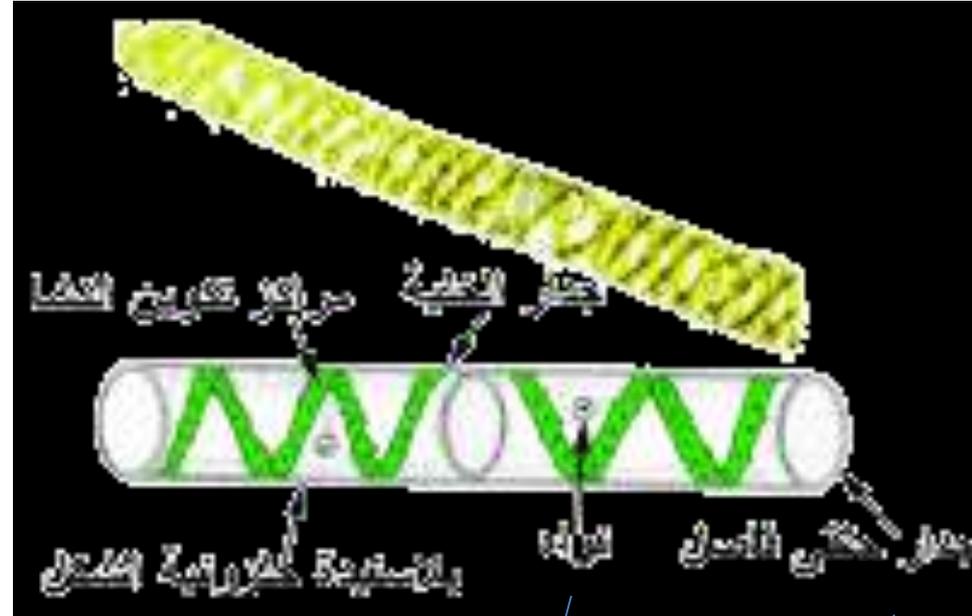
مثل : طحلب *Nostoc*



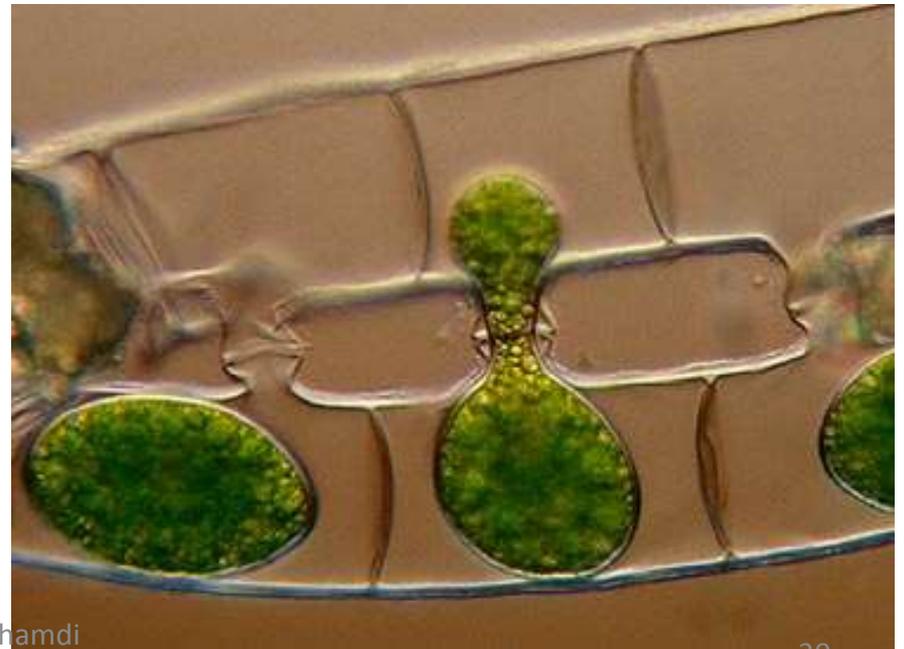
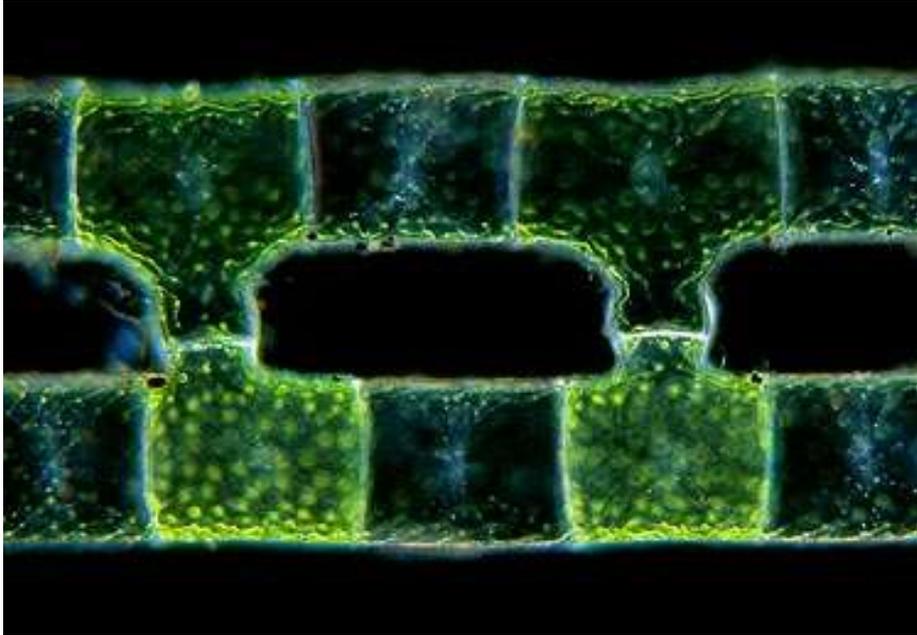
2- Chlorophyta



مثل: طحلب *Spirogyra*

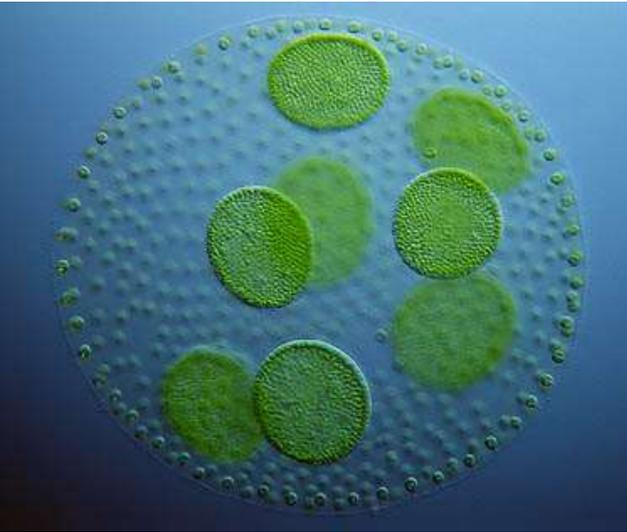


Conjugation in *Spyrogyra*

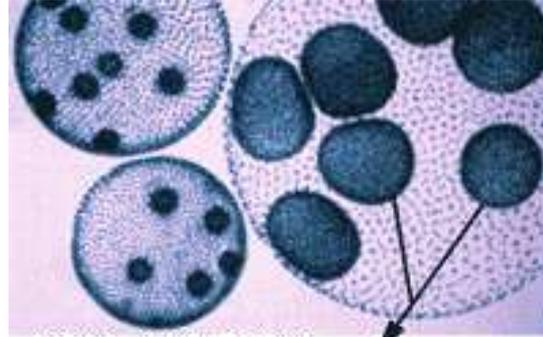


2- Chlorophyta

Microscopic graph

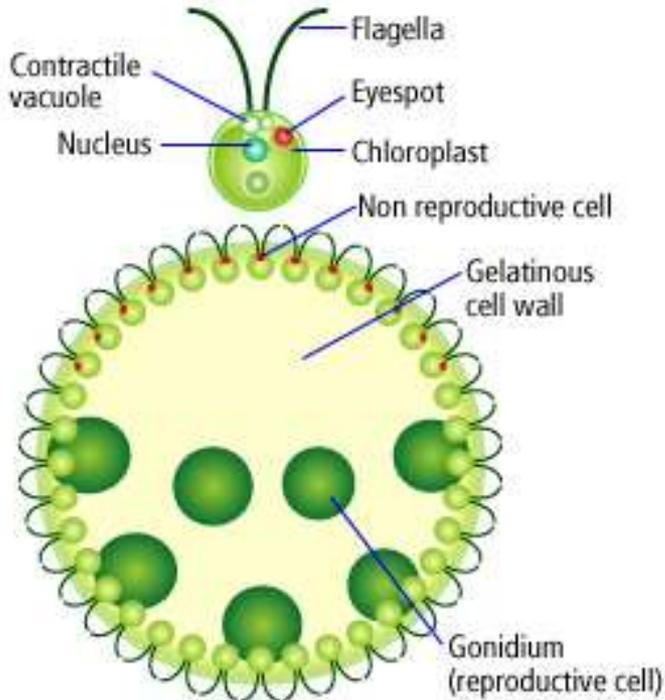


مثل : طحلب الفولفوكس *Volvox*



المستعمرات البنوية في
طحلب الفولفوكس

خلايا جسدية



غلاف جيلاتيني

خلايا تكاثرية

Amal Alghamdi
2102

