

General botany

1st Year science

2023

Systematic

Sec 1

(practical)

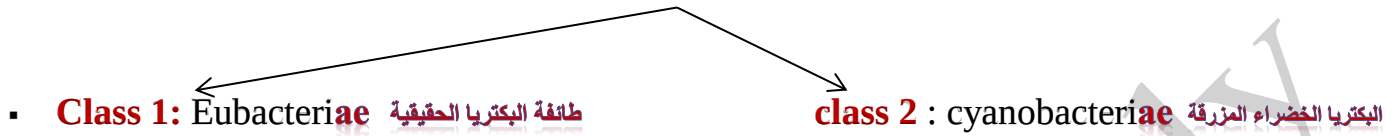
Dr . Eman Elbiady

SEC 1

- Systematic Position :

❖ **Kingdom:** Bacteria مملكة البكتيريا

▪ **Phylum:** Eubacteria شعبة البكتيريا الحقيقية



e.g 1 : Staphylococcus sp.

e.g2 : Klebsiella sp.

e.g.1 : Nostoc

e.g. 2 : Oscillatoria

e.g. 3 : Spirulina

➤ **Class 1:** Eubacteriæ طائفة البكتيريا الحقيقية

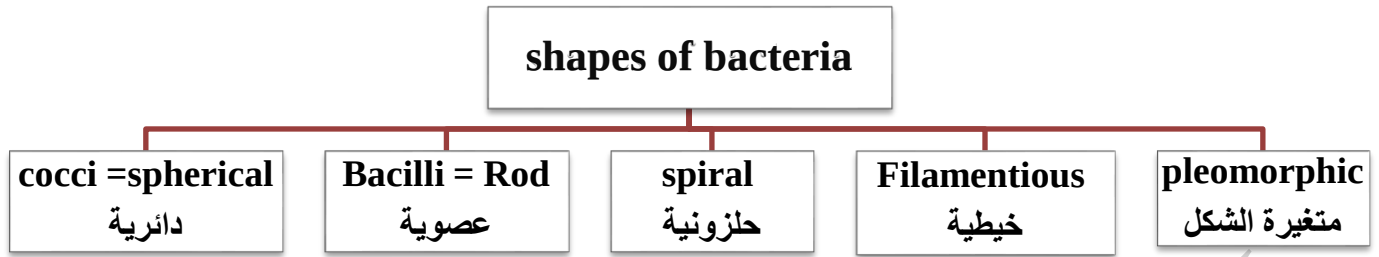
✓ Comment :

- 1) prokaryotic : (primitive nucleus)
- 2) Unicellular
- 3) cell wall (peptidoglycan)
- 4) may be beneficial or harmful

🚦 NOTE :

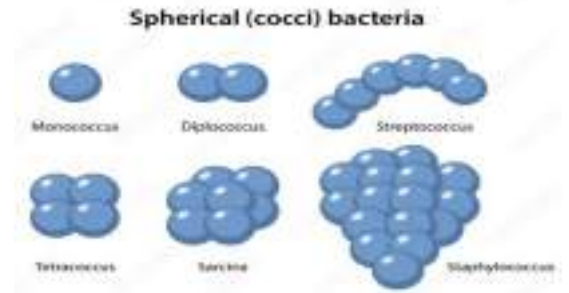
- **gram Staining:** a technique used to differentiate between types of eubacteria
 - **gram +ve bacteria:** with a thick peptidoglycan cell wall, stain purple
- **e.g. Staphylococcus sp.**
 - **gram -ve bacteria:** with a thin peptidoglycan cell wall, covered by an outer membrane, stain red
- **e.g. Klebsiella sp.**

✓ Classification Of Bacteria According To Shape & Structure



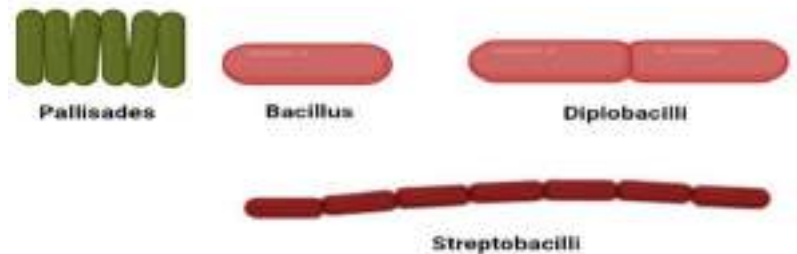
1) Cocci: Spherical or oval bacteria

- 1) **Monococci** (single cell) ف شكل فردي
- 2) **Diplococci** (in pair) يتكون ف شكل زوج
- 3) **Streptococci** (chain like) في شكل سلسلة او سبحة
- 4) **Staphylococci** (grape like cluster) شبه عنقود العنب
- 5) **Tetracocci** (group of 4 cocci) شكل رباعي
- 6) **Sarcina** (cube like structure) مكعبة الشكل



2) **Bacilli** : Rod shape bacteria

- 1) **Monobacilli**
- 2) **Diplobacilli** شكل زوج
- 3) **Streptobacilli** شكل سلسلة
- 4) **Palaside**

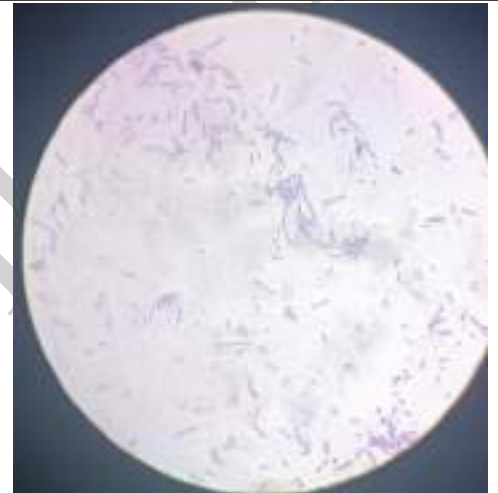
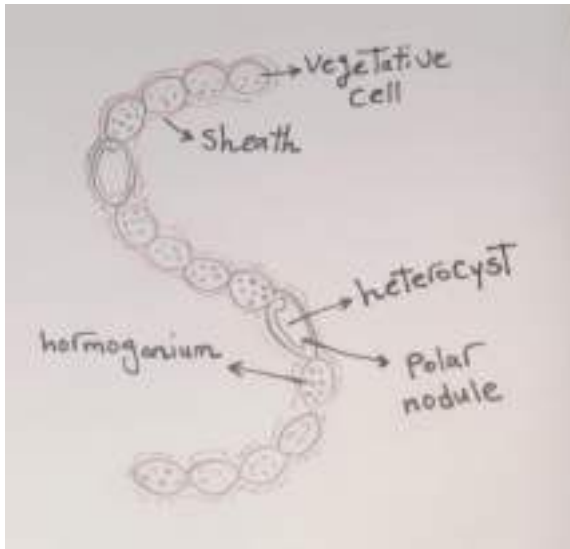


3) **Spiral** : بكتيريا حلزونية بتلف حوالين نفسها

- 1) **Spirillum**
- 2) **Spirochete**
- 3) **Vibrio** (comma shape)

➤ class 2 : cyanobacteriae

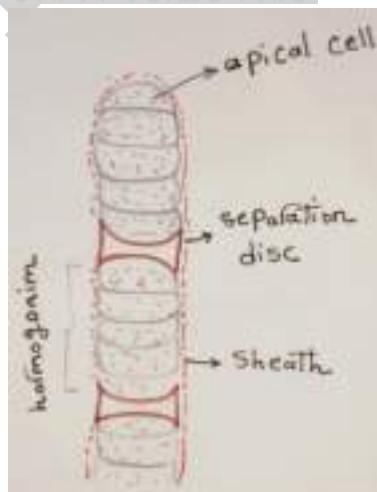
1) Nostoc



➤ Comment :

- Filamentous , unbranched
- Cells → twisted & spherical (oval)
- sheathed
- with heterocysts (that fix N_2) وبتكون اكبر من الخلايا الخضرية (for vegetative reproduction) وبتكون مغايرة وبتكون اكبر حجمها

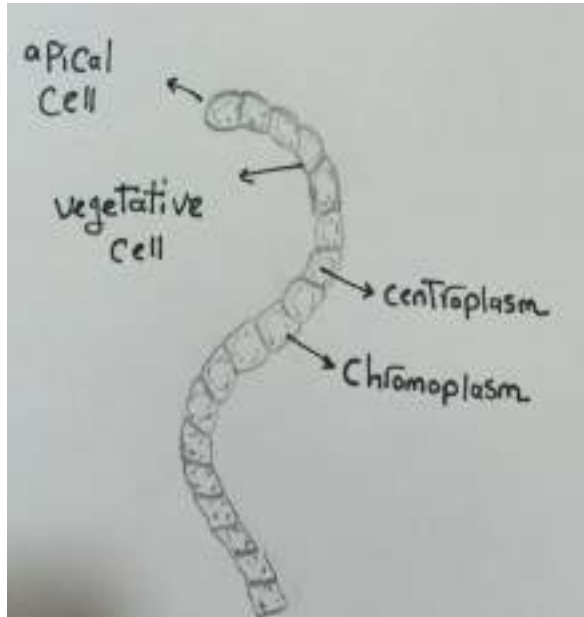
2) Oscillatoria : مش مطلوب رسم



➤ Comment :

- Filamentous , unbranched
- Cells → straight , rectangular
- sheathed or not
- with **hormogonia** (for vegetative reproduction)
- with separation disc (few dead cells)

3) Spirulina



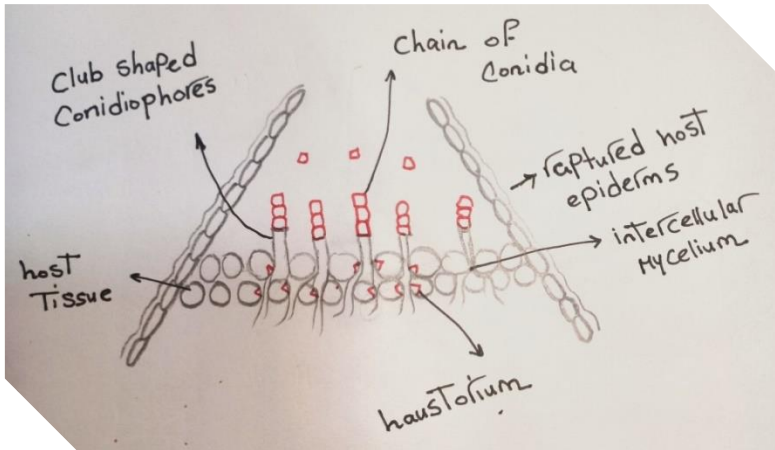
➤ Comment :

- Filamentous , unbranched
- Cells → spiral , quadrate مضلعة
- unsheathed
- with **an apical cell**
- with separation disc (few dead cells)

Kingdom : Protista

Phylum : Oomycota (water molds) e.g. Albugo	Phylum : chlorophyte (green algae) Order : Zygnematales Family : Zygnemataceae e.g. Spirogyra	Phylum : Chromophyta Class : phaeophyceae (brown algae) e.g. Fucus sp. Class 2 : bacillariophyceae - Order 1: centrales (centric diatoms) - Order 2 : pennales (pennate diatoms)
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1) Albugo مش مطلوب رسم

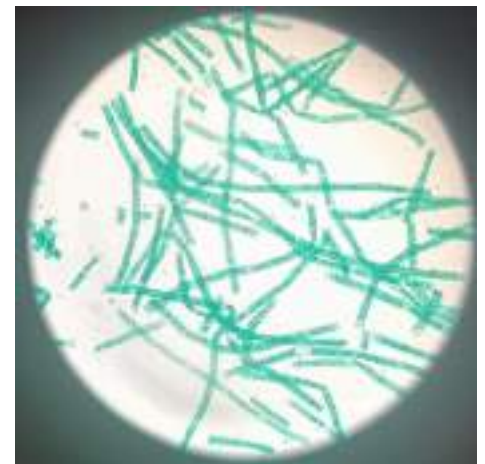
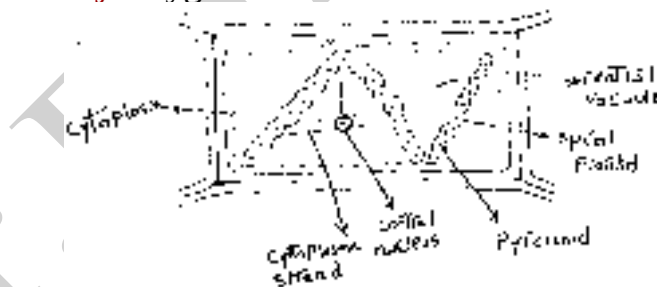


➤ Comment :

- Parasitic
- Mycelium → non-septate & intercellular
- Conidiophore → short, Club-shaped & carries chain of conidia

1) Spirogyra

- **Phylum** : chlorophyte
- **Order** : Zygnematales
- **Family** : Zygnemataceae



➤ Comment :

- **Pigments**: **photosynthetic** (chlorophylls a & b) **accessory** (carotenoids & xanthophylls).
→ found in their green chloroplasts
- **Thallus** → unbranched filament.
- **Chloroplast** → spiral shaped (**ribbon like**)
- **Cytoplasm** → thin & peripheral

2) Fucus sp.

- **Phylum** : Chromophyta
- **Class** : phaeophyceae (brown algae)

➤ **Comment :**

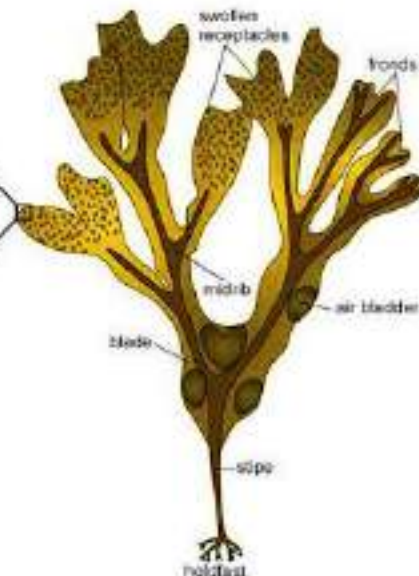
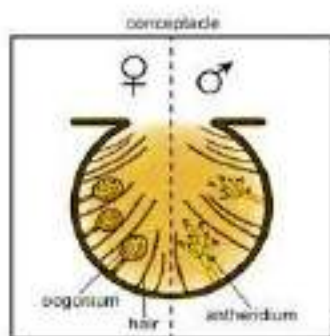
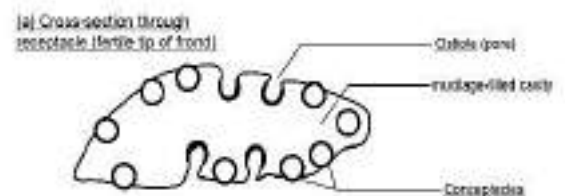
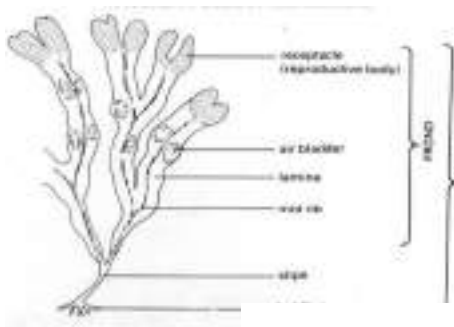
- **Pigments**: chlorophyll a & c , **accessory pigments** → (such as brownish fucoxanthin) & xanthophylls.
- **Sex Organs** → in conceptacles
- **Thallus consists of** holdfast, stipe (stalk) & lamina (blade). يتكون من ماسك جذري وسويقة ونصل.
- **Internal Structure**: meristoderm, cortex, medulla (filamentous) & (♀ or ♂) conceptacles

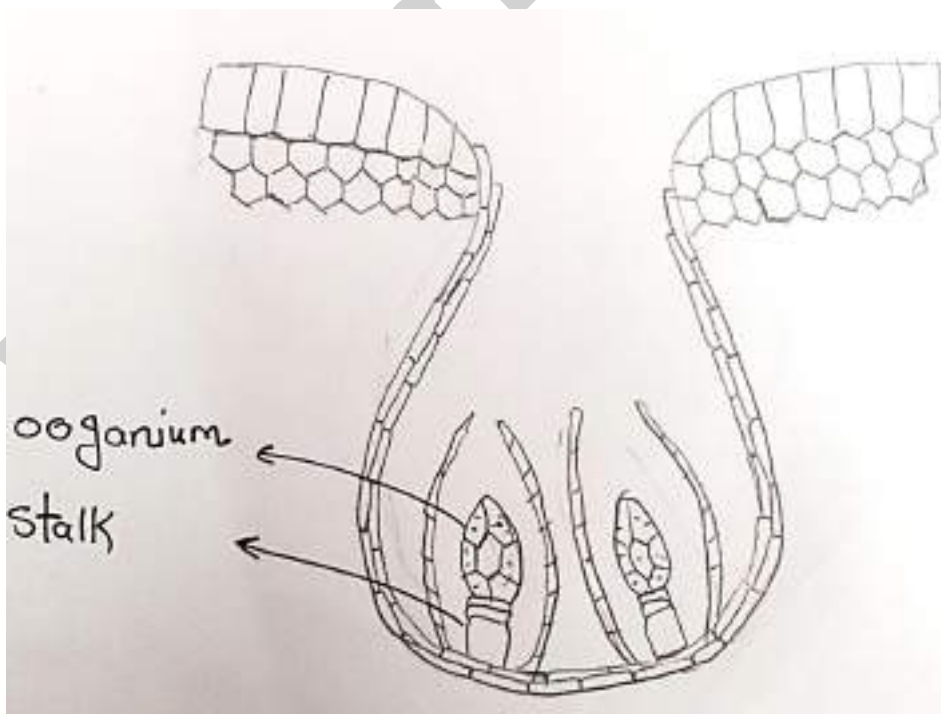
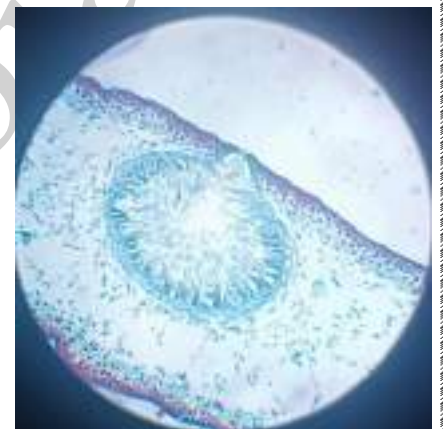
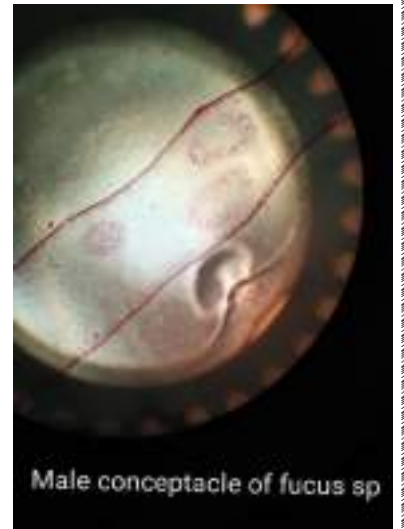
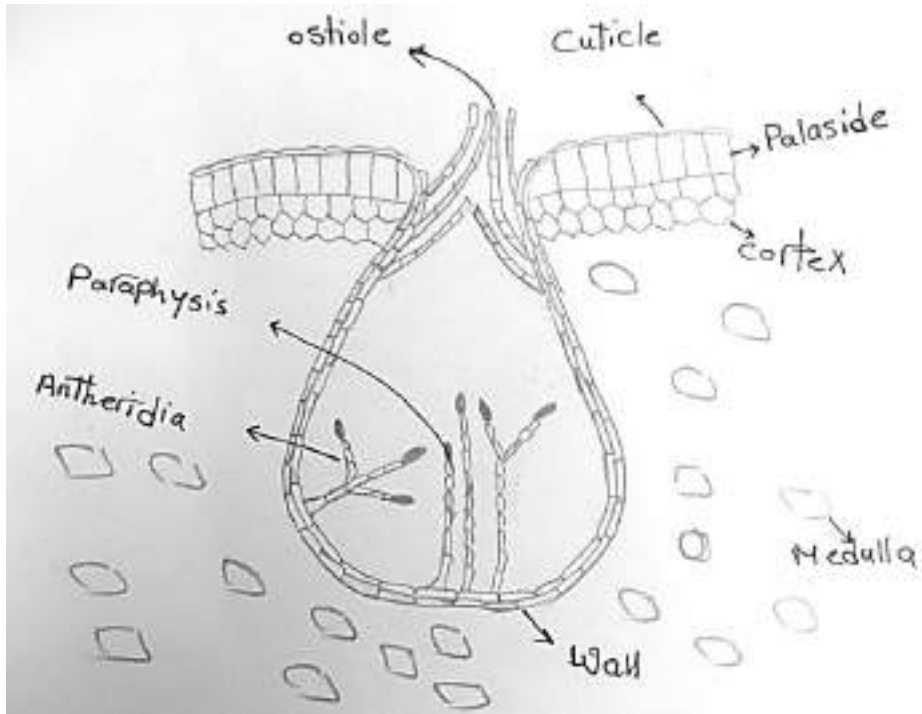
- ♀ **conceptacle of focus**

- Oogonium → ♀ sex organ
- Oogonium contain 8 **Oospheres** امشاج مؤنثة

- ♂ **conceptacle of focus**

- Antheridium → ♂ sex organ
- Antheridium contain **antherzoids** امشاج مذكرة

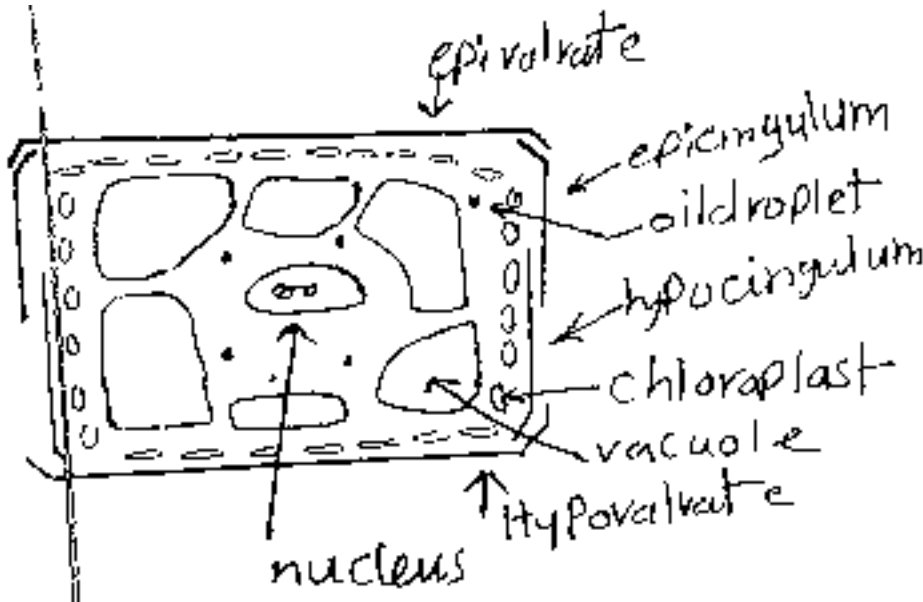
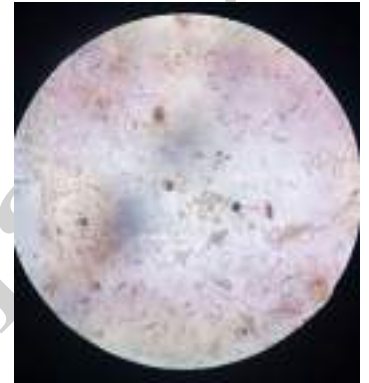




3) DIATOMS

Class 2 : bacillariophyceae

- Order 1: centrales → (centric diatoms)
- Order 2 : pennales → (pennate diatoms)



➤ Comment :

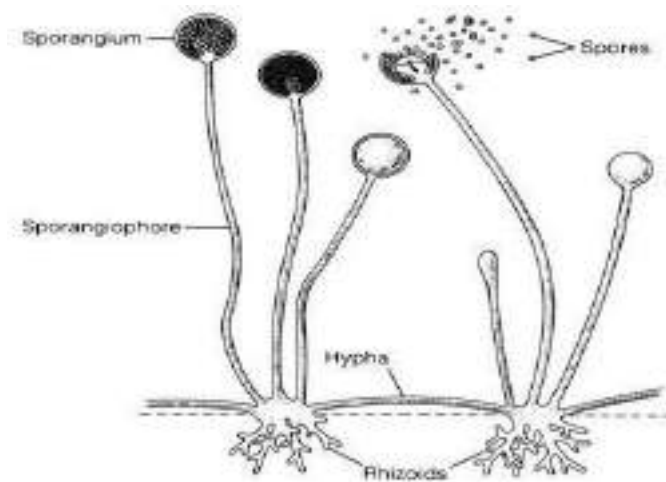
- Unicellular microscopic algae
- Silicified cell wall → frustule محارة
- Diatoms may be

Centric	Pennate
- No raphe - Radially symmetrical (round on top view)	- Have raphe - Bilaterally symmetrical (elongate on top view)

Kingdom : Fungi

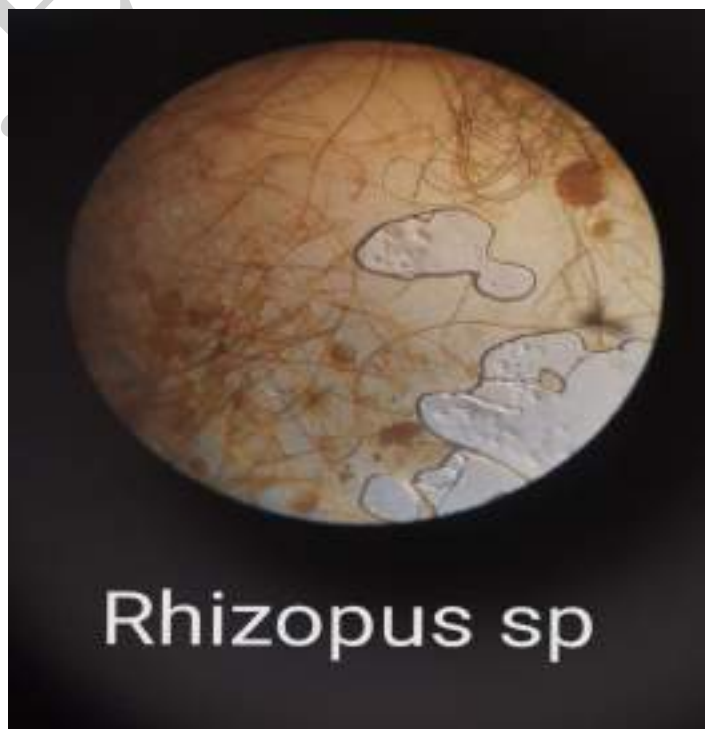
a) Phylum : Zygomycota (ceanocytic fungi)

e.g. *Rhizopus* → common black, bread moulds



➤ Comment :

- Saprophytic fungi
- With non- septated mycelium
- Sporangiphore arise opposite to the branched rhizoids
- Each sporangiphore carries a large sporangium (spore sac)

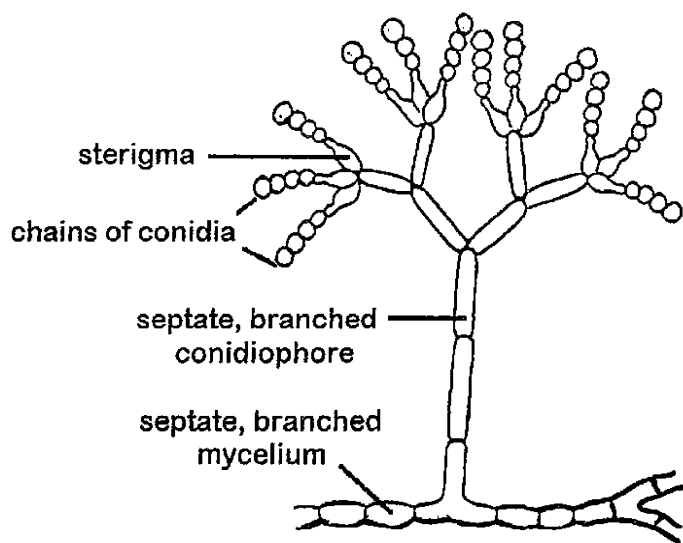


- Kingdom : Fungi
b) Phylum : Ascomycota (sac fungi)

- e.g . Penicillium

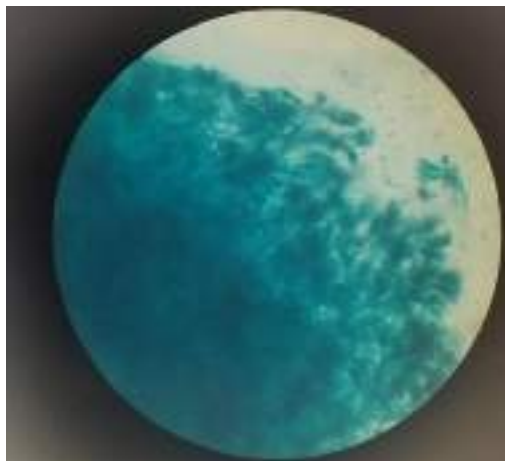
- e.g 2 . Aspergillus

Penicillium

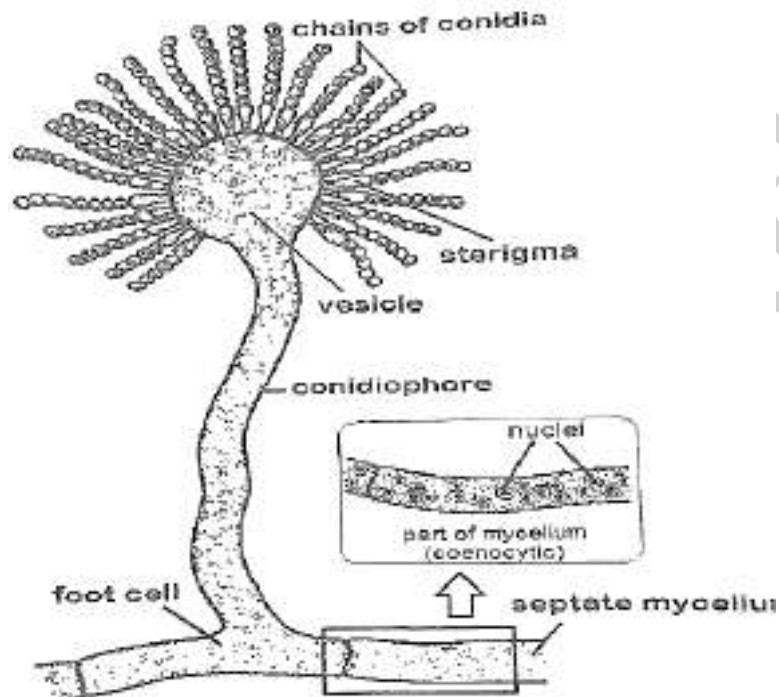


➤ **Comment :**

- c) Saprophytic fungi
- d) With septated & branched mycelium
- e) With septated & branched conidiophores
- f) Each conidiophores carries chains of conidia on sterigmata اعناق صغيرة



Aspergillus



➤ Comment :

- **Most** are Saprophytes , **Few** are parasites
- With septated & branched mycelium
- With non- septated conidiophores
- Each conidiophores carries a vesicle حويصلة with chain of conidia (on sterigmata)



Agaricus

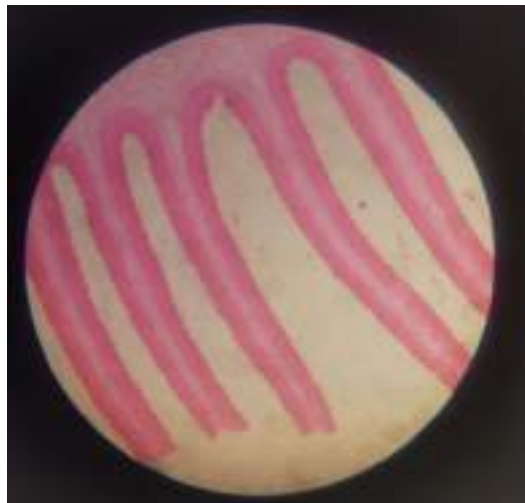
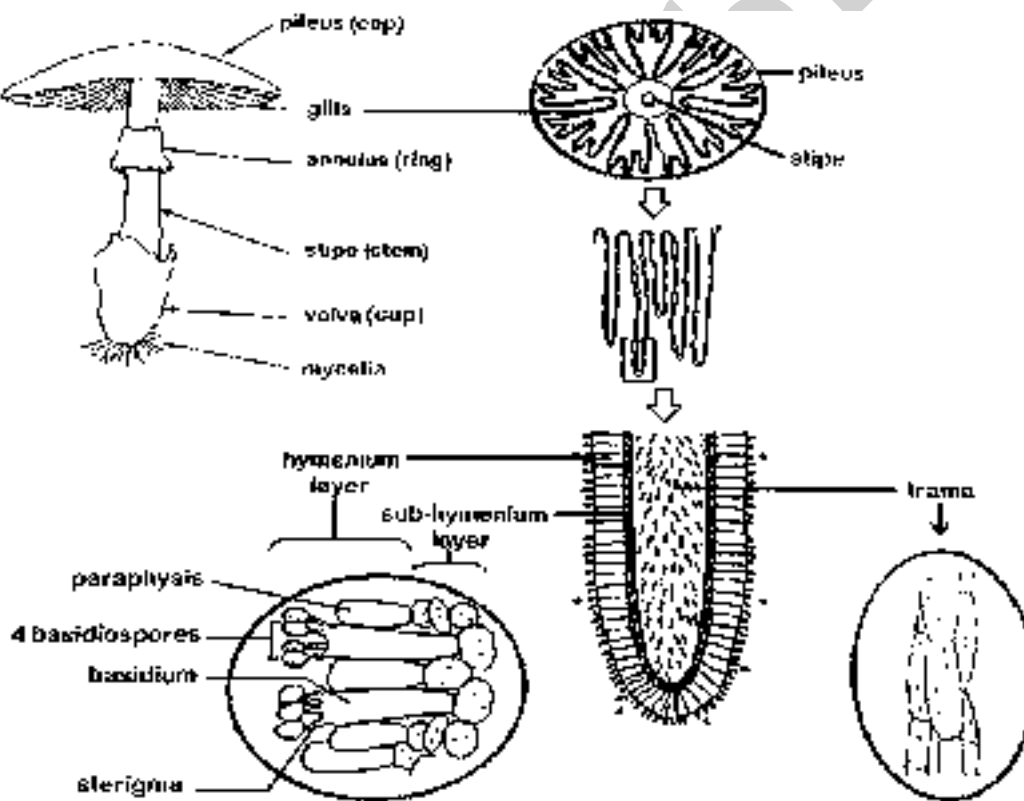
➤ Comment :

- Saprophytic fungus-

- V.S. in gills shows 3 layers:

- I. Hymenium layer (المنطقة الخصبية (المنتجة للجراثيم)
- II. Sub-hymenium layer المنطقة تحت الخصبية
- III. Trama النسيج الوسطي، وسط الغزل الفطري

- Each basidium يحمل بزيدي carries 4 basidiospores (sexual spores) on strigmata اعناق صغيرة



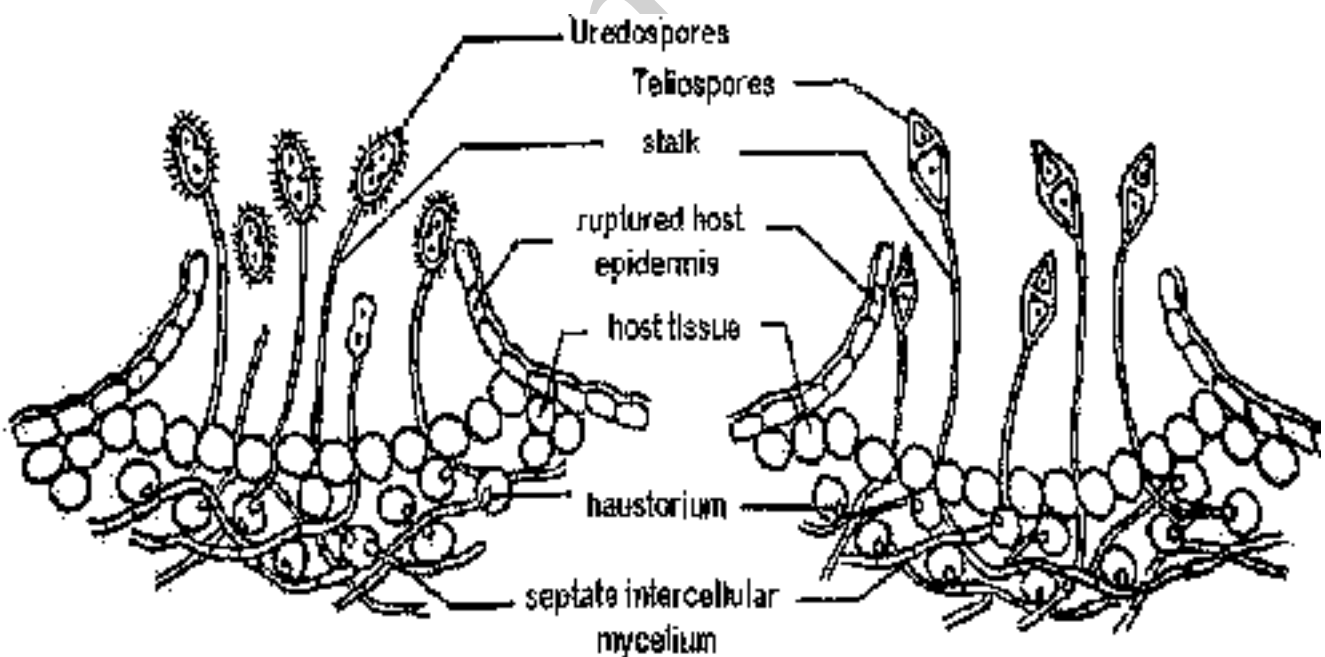
Kingdom: Fungi
Phylum: Basidiomycota (Club Fungi)
e.g. Puccinia Graminis (The Wheat Rust)

➤ **Uredospores of Puccinia graminis-**

- P. graminis → a parasitic fungus; infect **wheat (1ry host) & Barberry (alternate host)**.
- Uredospores are formed on wheat, within uredosorus.
- Uredospores are: stalked, unicellular, binucleate, orange spores (spiny or covered with warts) نتوات
- Mycelium is branched, septate & intercellular.

➤ **Teliospores of Puccinia graminis**

- P. graminis → parasitic fungus; infect wheat (1ry host) & Barberry (alternate host).
- Teliospores are formed on wheat, within **teliosorus**.
- Teliospores are; stalked, bicellular, uni-nucleate, smooth, brown spores.
- Mycelium is branched, septate & intercellular.



Pinus Sp

Kingdom: Plantae

Phylum : Pinophyta (Conifers)

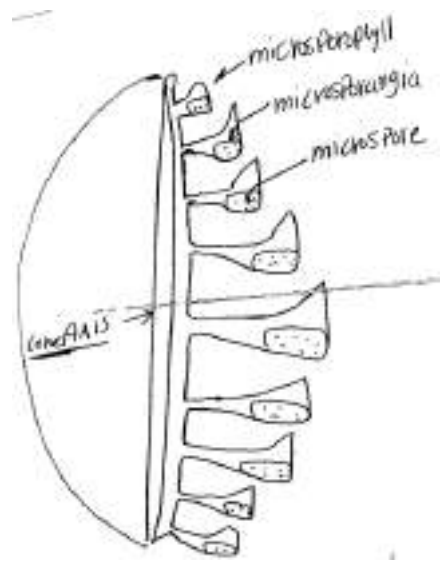
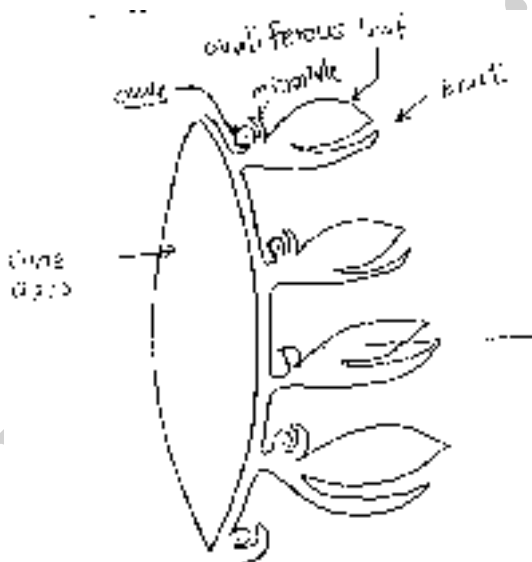
Order: Coniferales

Family : Pinaceae

➤ Comment :

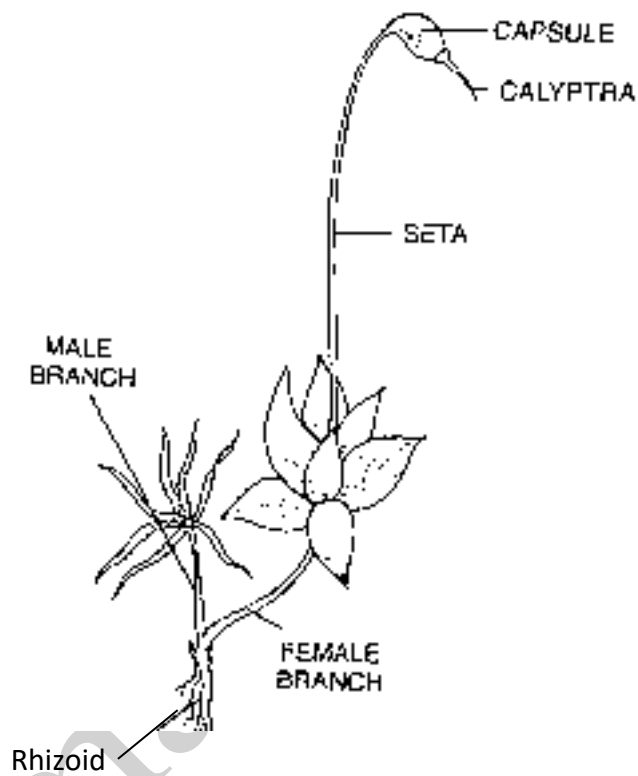
- belong to **gymnosperm**
 - plant without flower
 - seed not enclosed in ovary
 - wood not contain vessel but tracheids
- sporophyte carry ♀ & ♂ gametophyte in form of cones

♀ cones	♂ cones
- large - wide axis - carrying ovuliferous scale ,bract scale & ovule	- small - narrow axis - carry microsporophyllus , microsporangium & pollen grains



Funaria

- **Kingdom : plantae**
- **Phylum : bryophyte (mosses)**
- **Family : funariaceae**



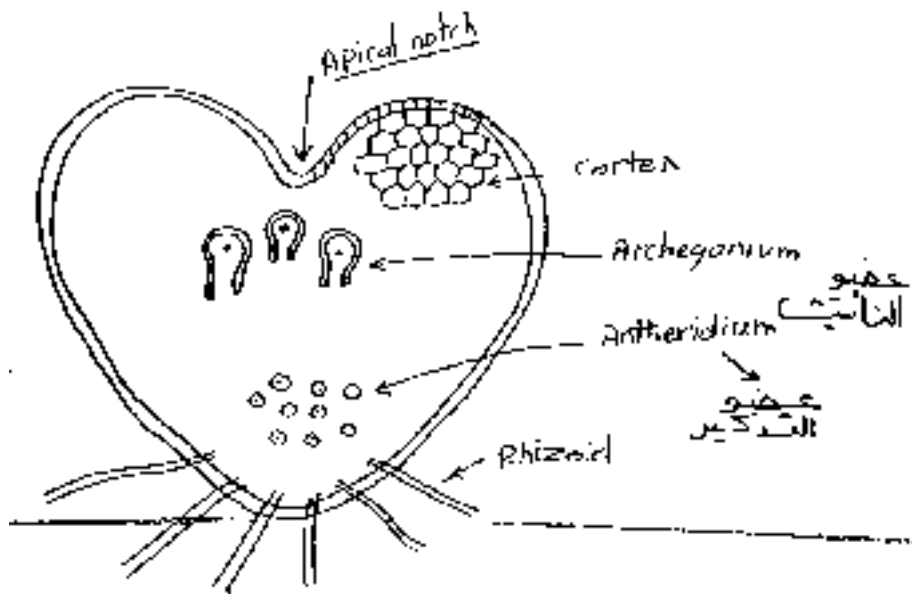
➤ **Comment :**

- Small & erect moss
- **Gametophyte**
 - Leaves
 - Stem
 - Rhizoid
- **Sporophyte**
 - Foot
 - Seta
 - Capsule
- Gametophyte carry sporophyte



Adiantum

- Kingdom : planta
- Phylum : polypodiophyta



➤ Comment :

- Gametophyte → **heart shape** → carry sex organ → arghegonium / antheridium
- **Sporophyte depend on gametophyte** for short period
- Thalloid plant **not** divide into Root , stem , leaves

