

# PG101

Section 3

Dermal tissues

## II-Dermal tissue

- ▶ The epidermis is the outer most layer of dermal layer which is a single-layered group of cells that covers plants' leaves, flowers, roots and stems.
- ▶ The walls of the epidermal cells are covered with a cuticle which reduces water loss to the atmosphere and forms a boundary between the plant and the external environment.

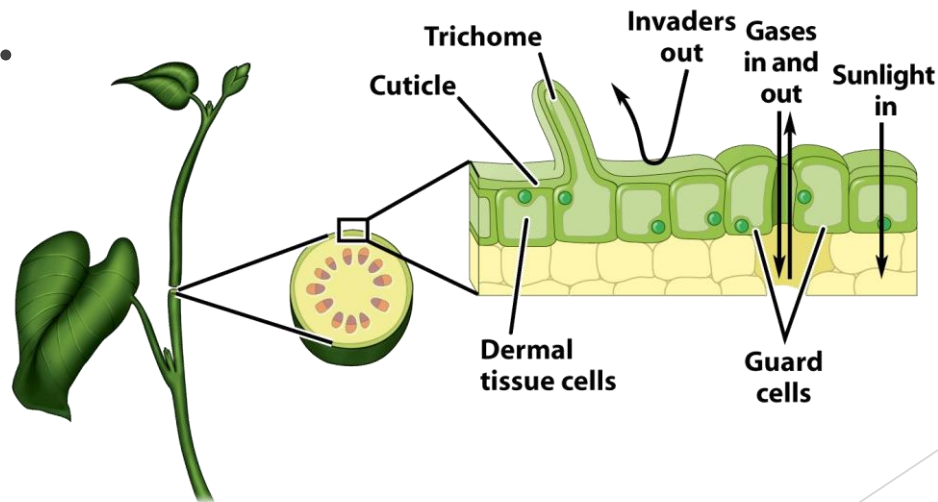
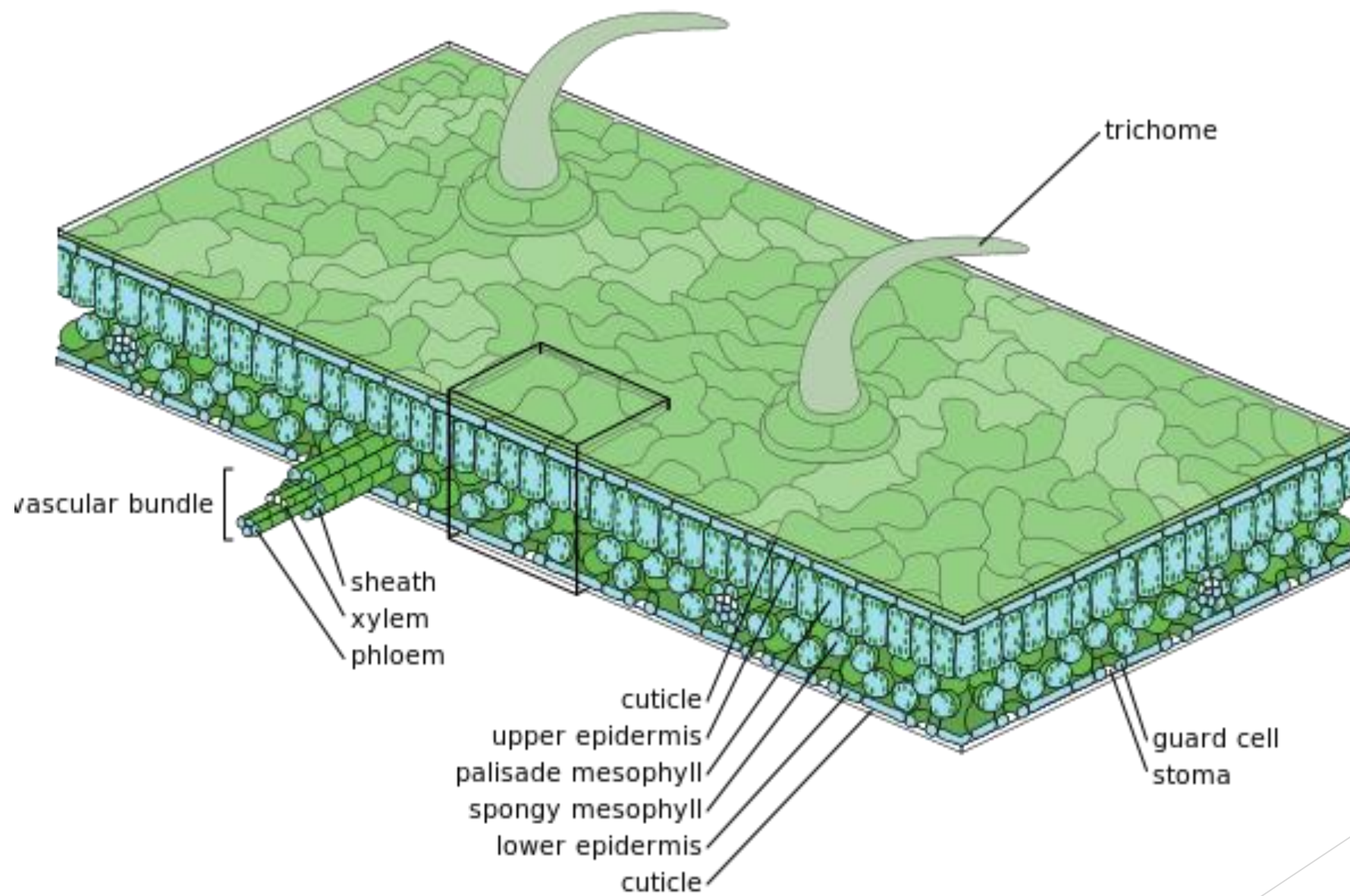
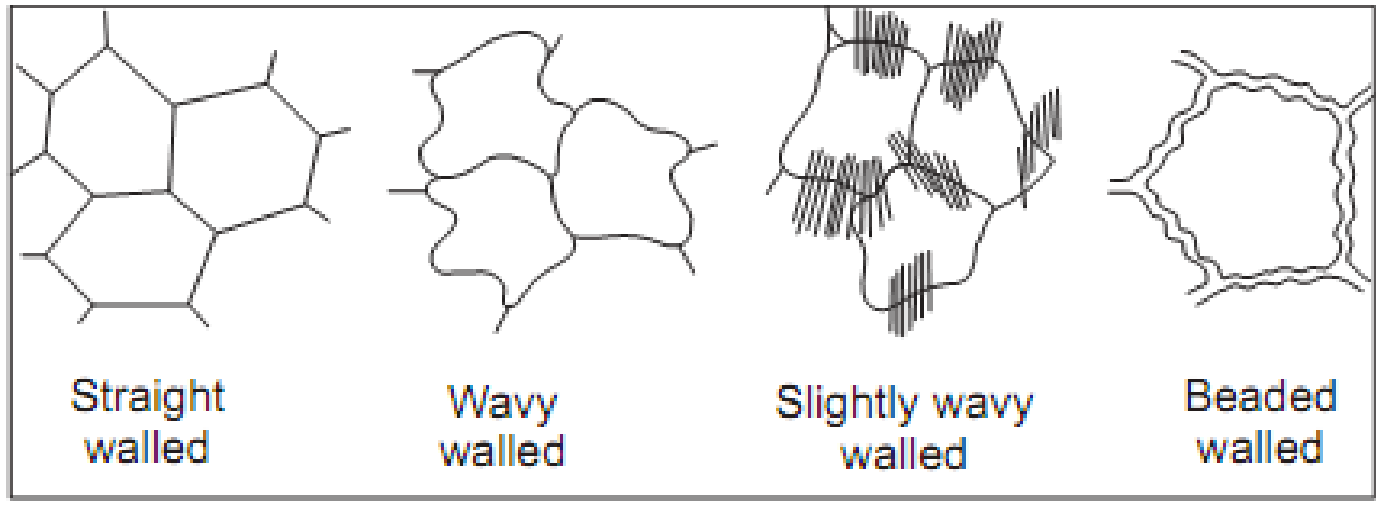


Figure 31-3 part 1 Discover Biology 3/e  
© 2006 W. W. Norton & Company, Inc.

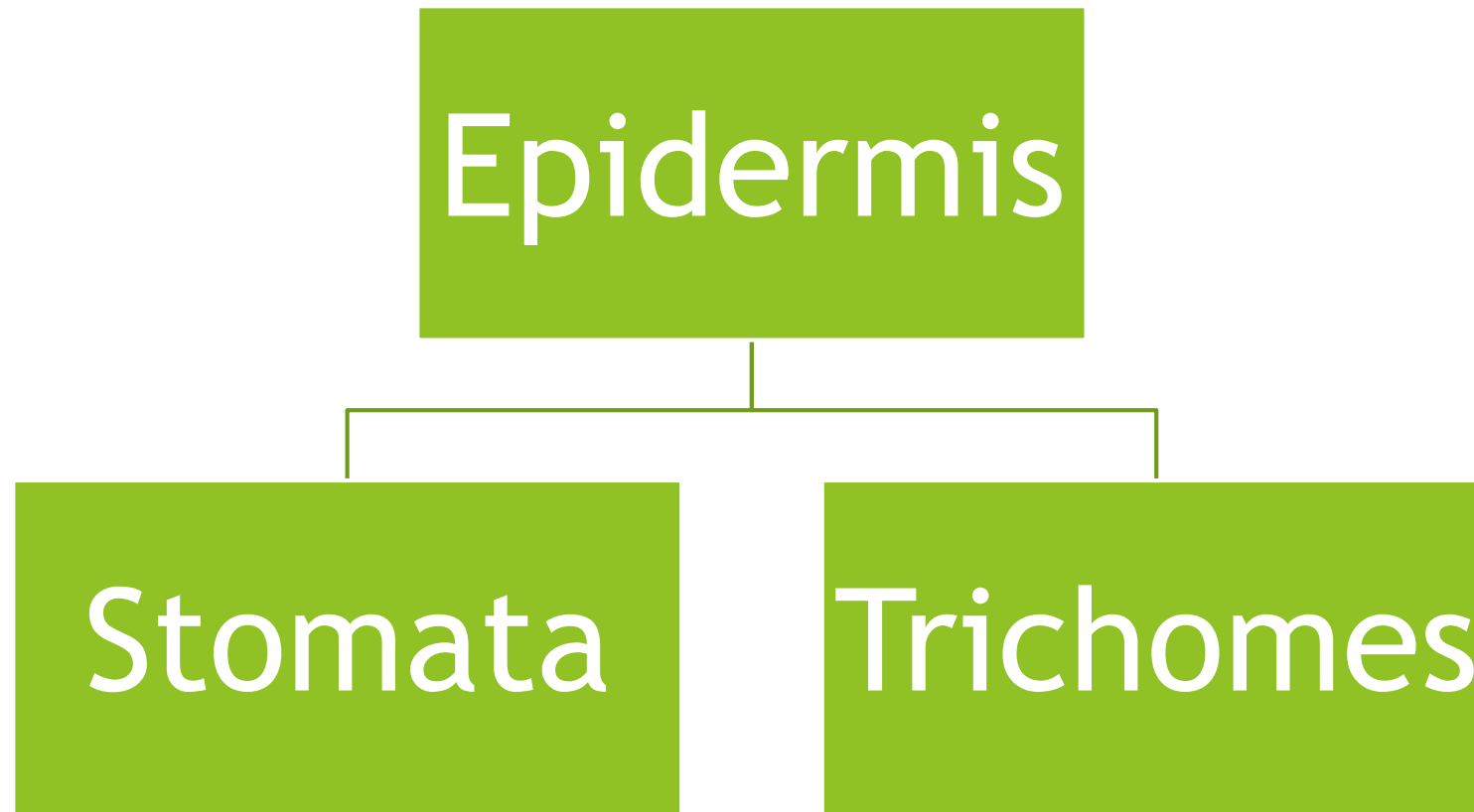


# Histology

- The walls may be straight, wavy or beaded and often covered with a layer of cuticle made up of cutin.

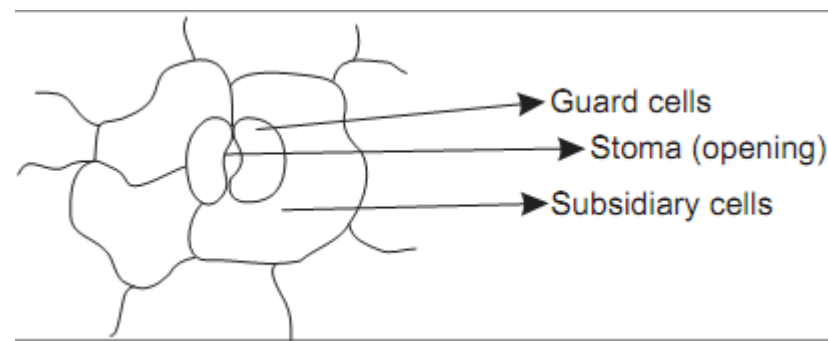
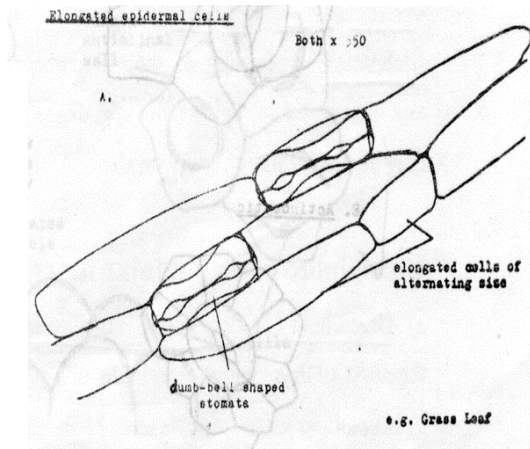


# Special structures in Epidermis



# Stomata

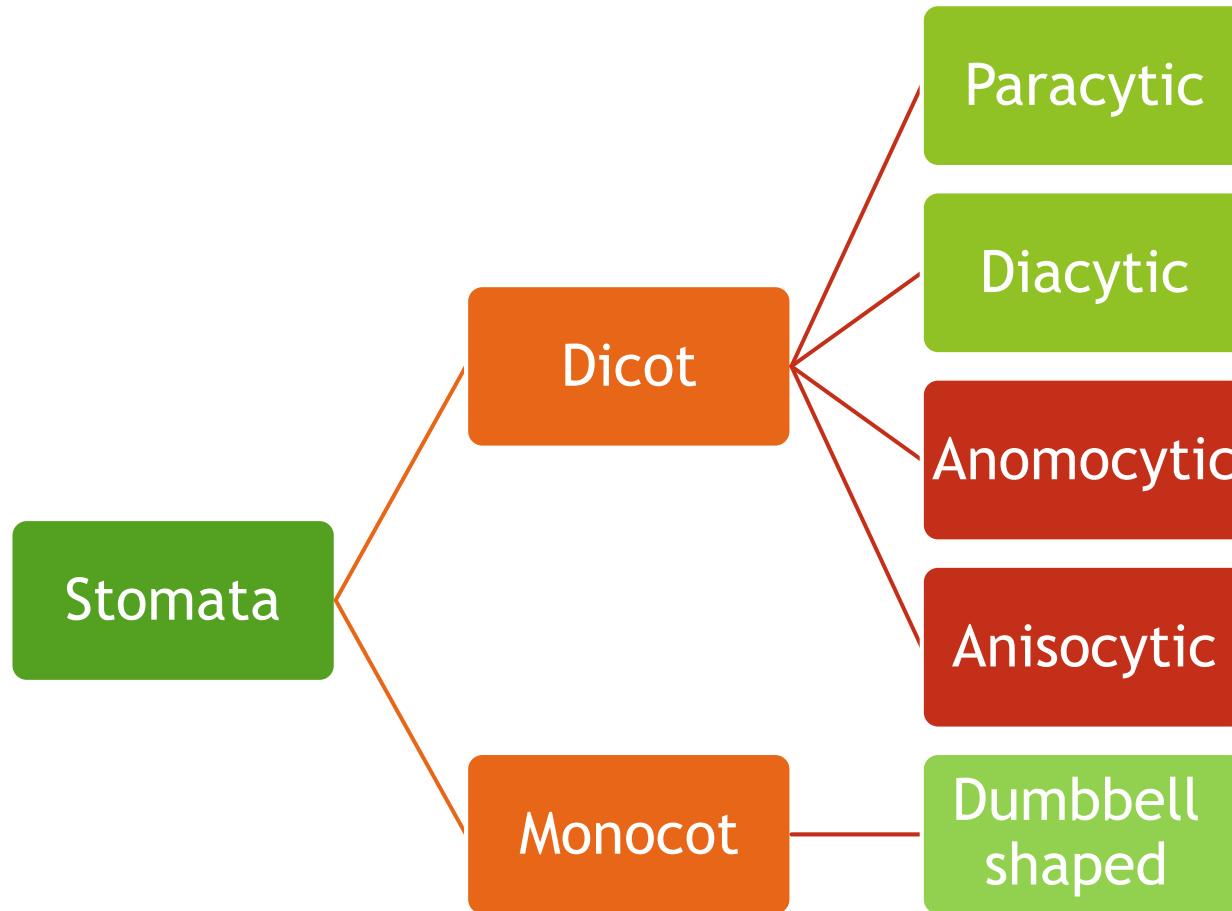
- ▶ It is composed of an opening enclosed by two kidney shaped guard cells in dicot or dumbbell shaped in monocot, these two cells are enclosed by Subsidiary cells that have different numbers and locations
- ▶ Stomata perform the function of gaseous exchange and transpiration



# Stomata

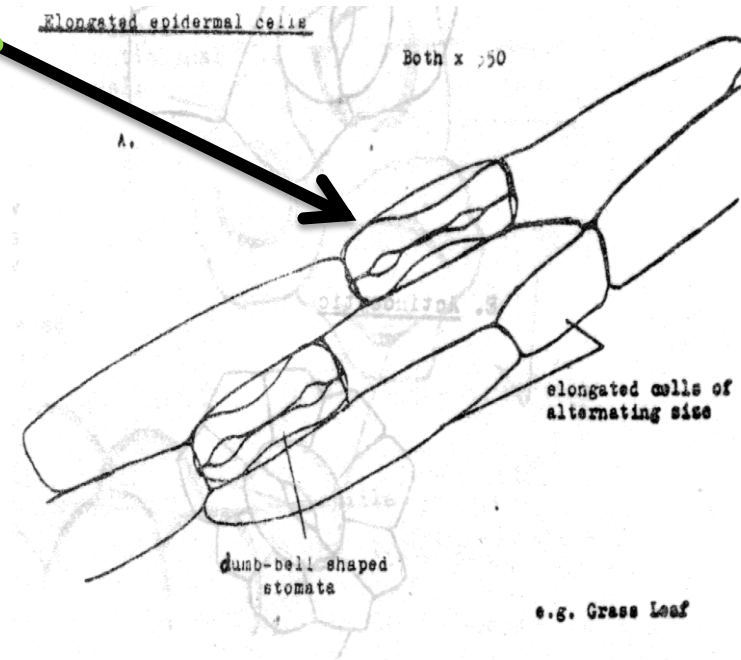
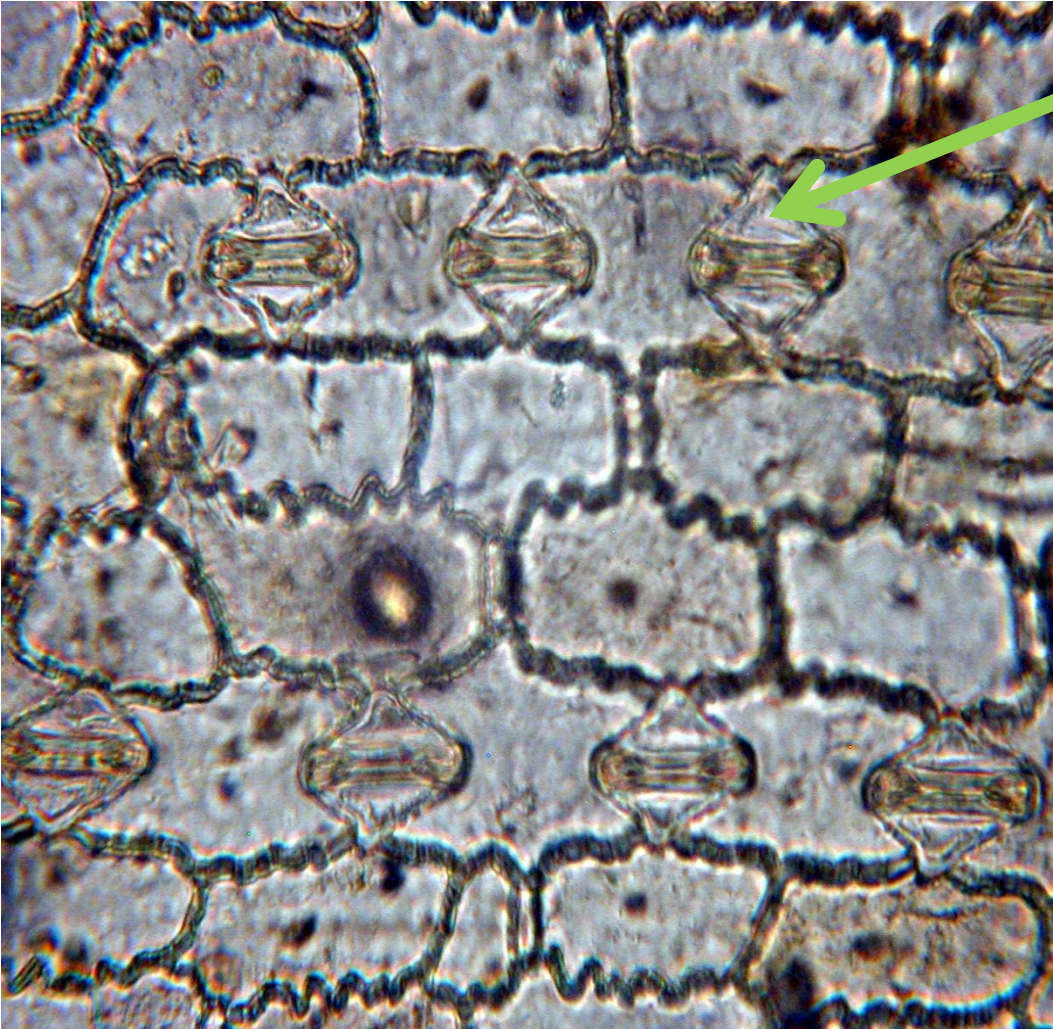
- ▶ In the plant body. They are most abundant in the lower epidermis of a dorsiventral leaf and less abundant on the upper epidermis.
- ▶ In isobilateral leaves, stomata remain confined to the upper epidermis alone
- ▶ in submerged leaves no stoma is present

# Types of stomata



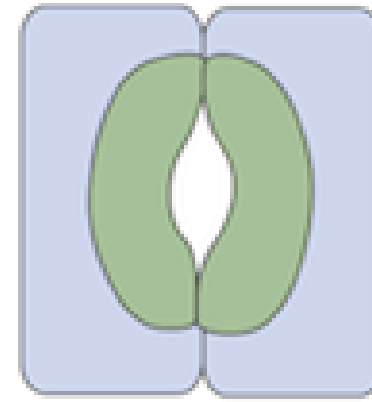
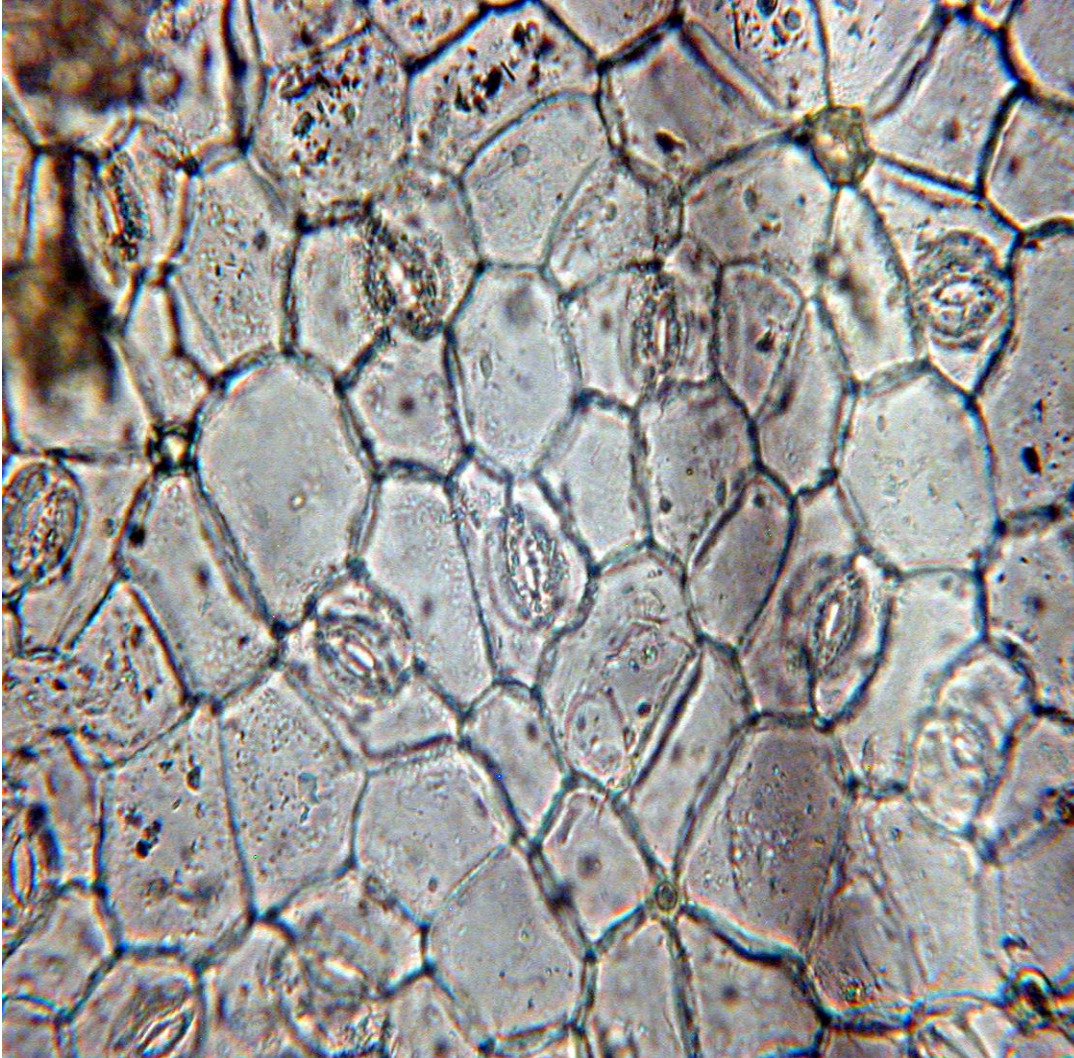


# Monocot stomata





## Paracytic stomata

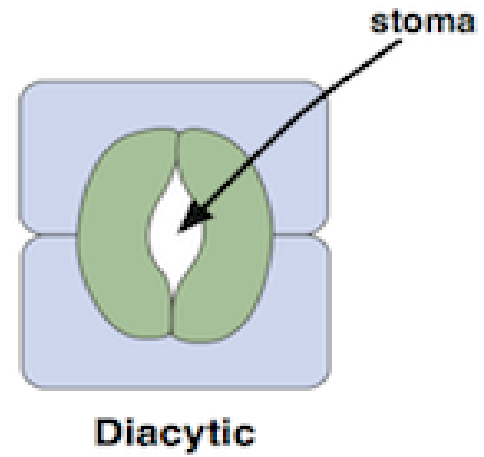
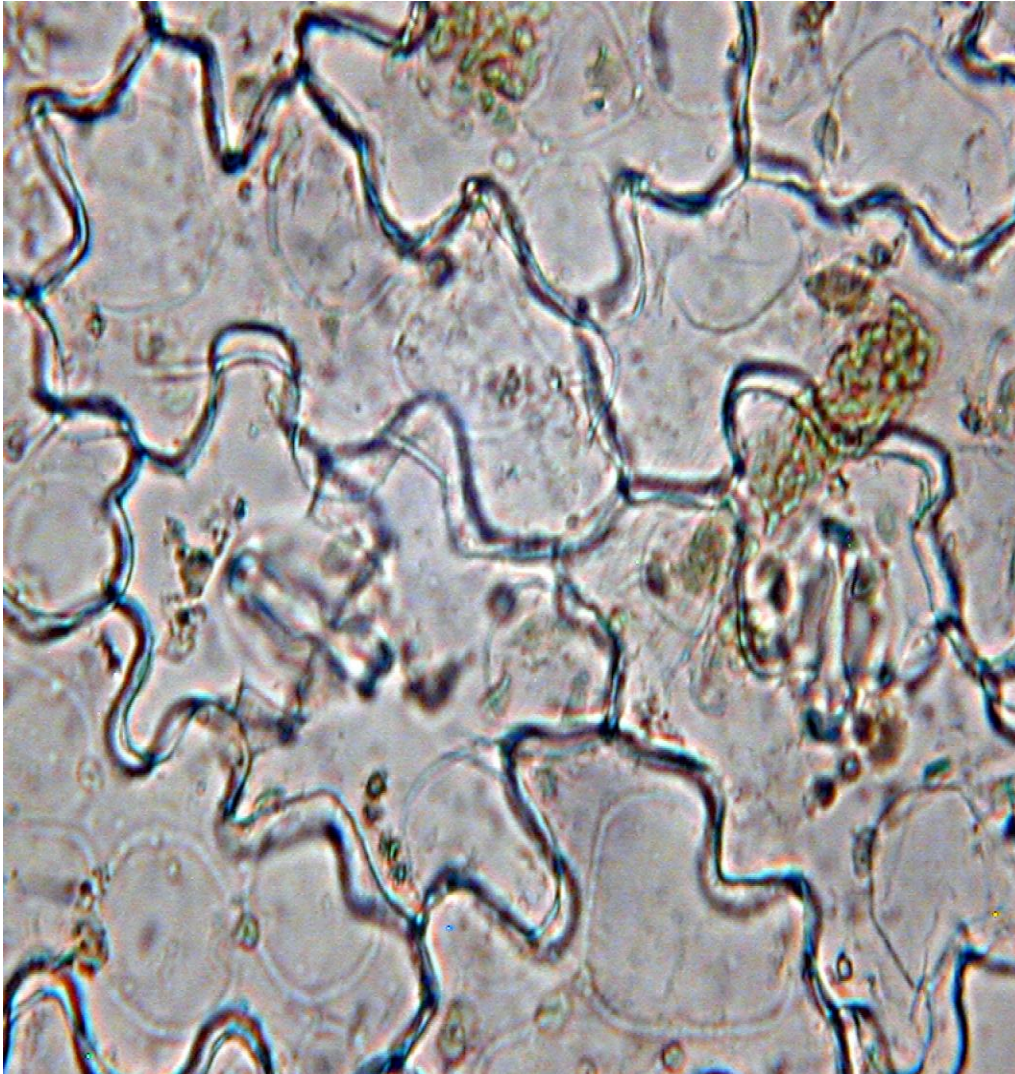


**Paracytic**

Surrounded by 2 subsidiary cells of which the long axis are parallel to the axis of stoma.



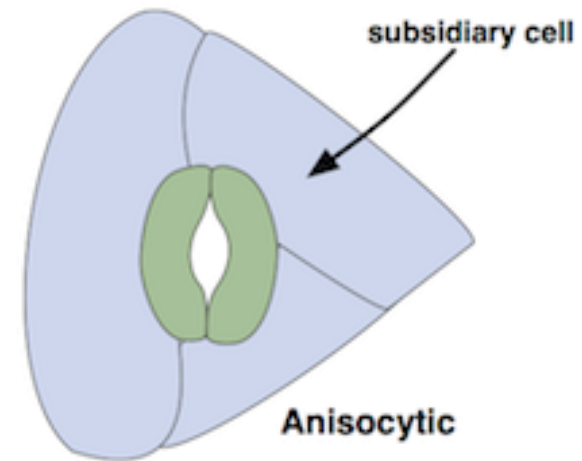
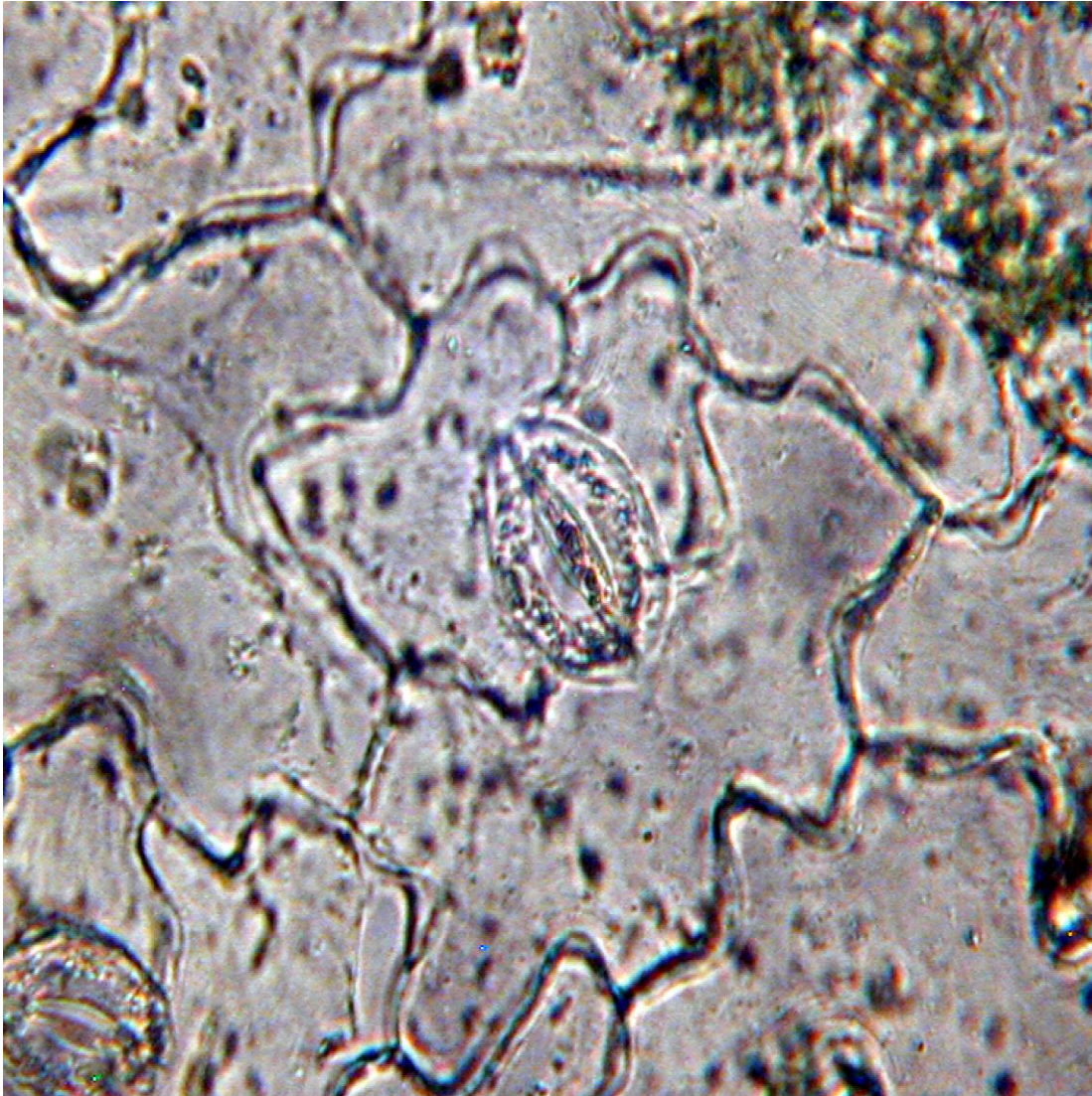
## Diacytic stomata



Surrounded by 2 subsidiary cells of which the common wall of which is at right angles to the stoma



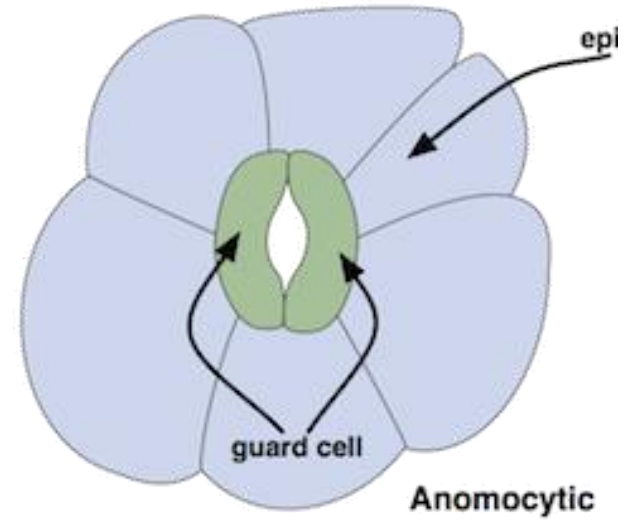
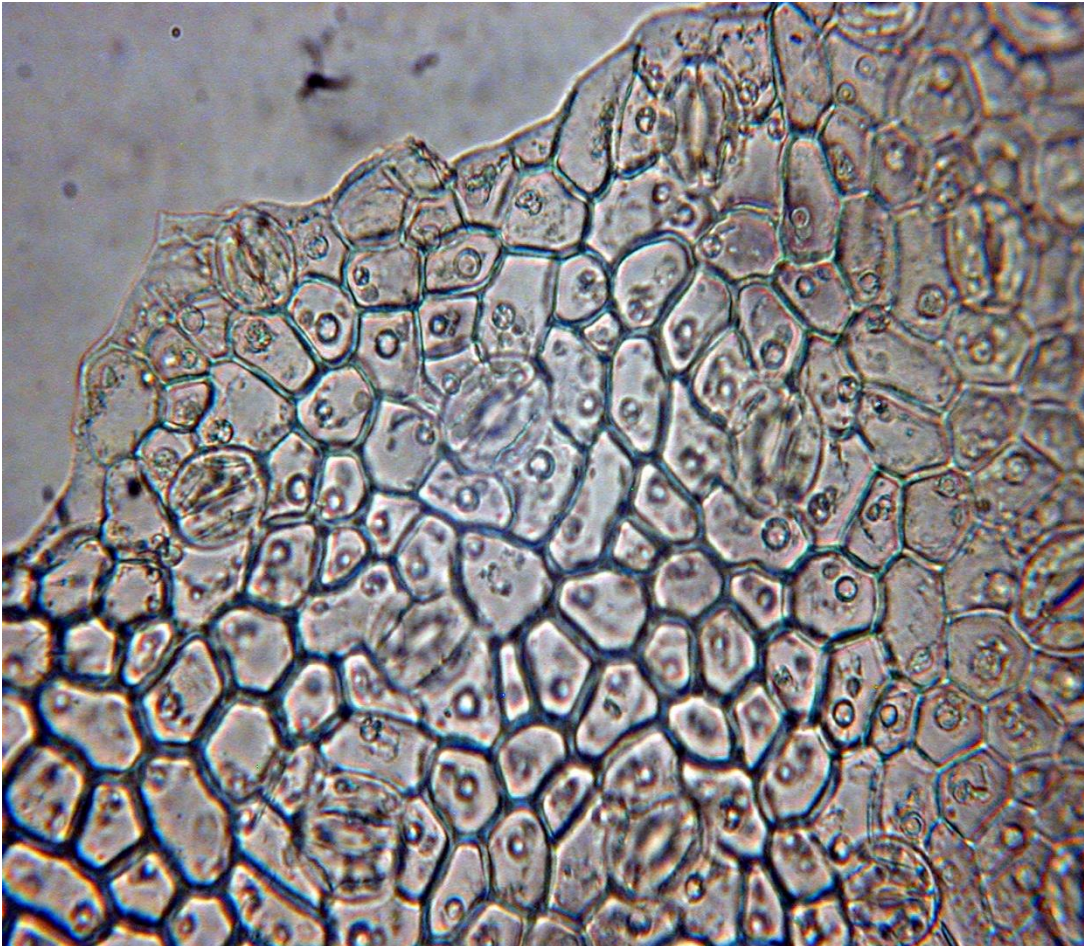
## Anisocytic stomata



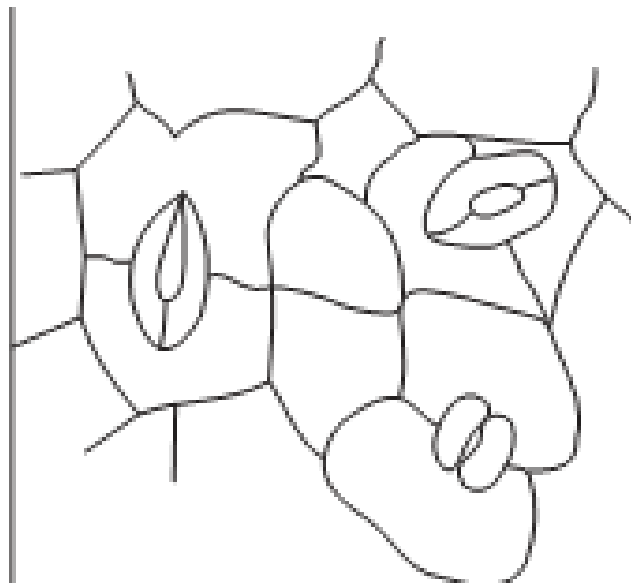
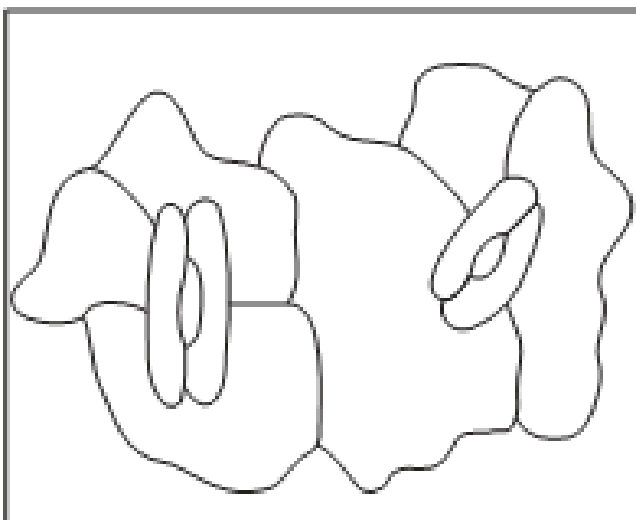
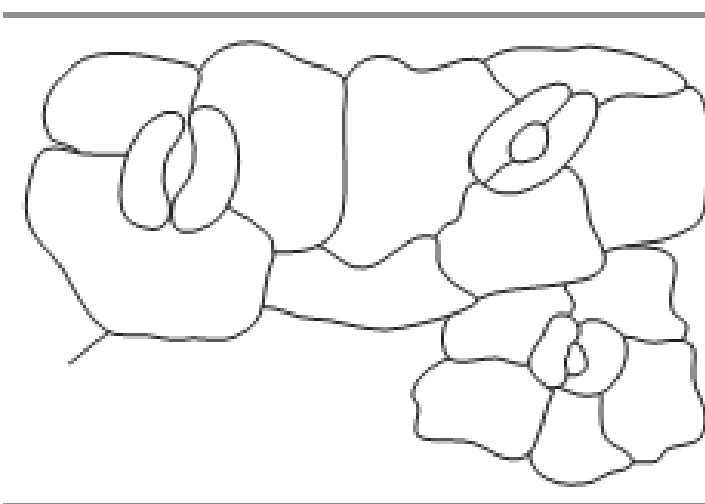
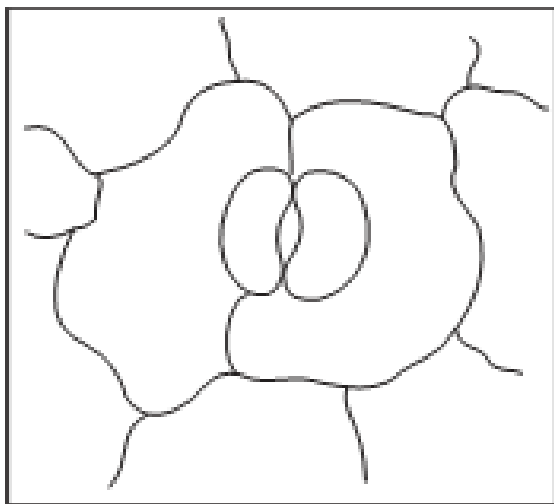
Surrounded by 3 or 4 subsidiary cells one of which is markedly smaller than the others



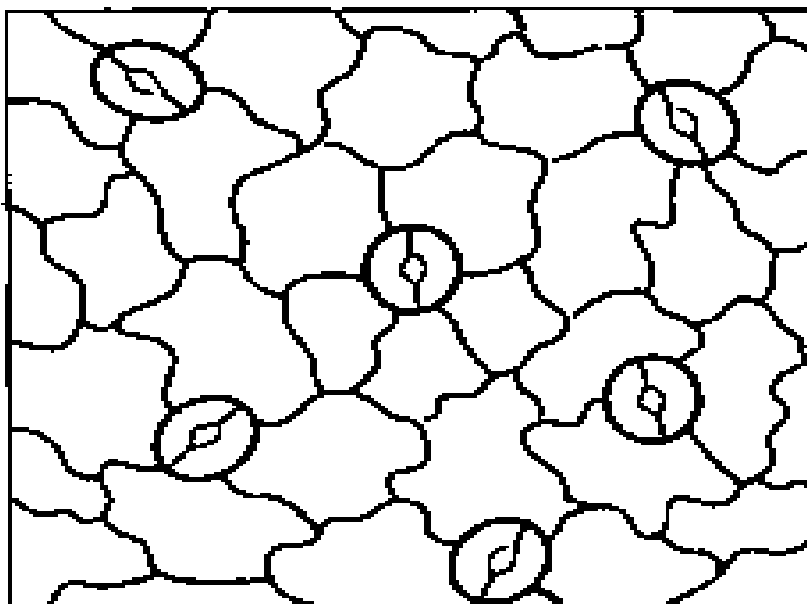
## Anomocytic stomata



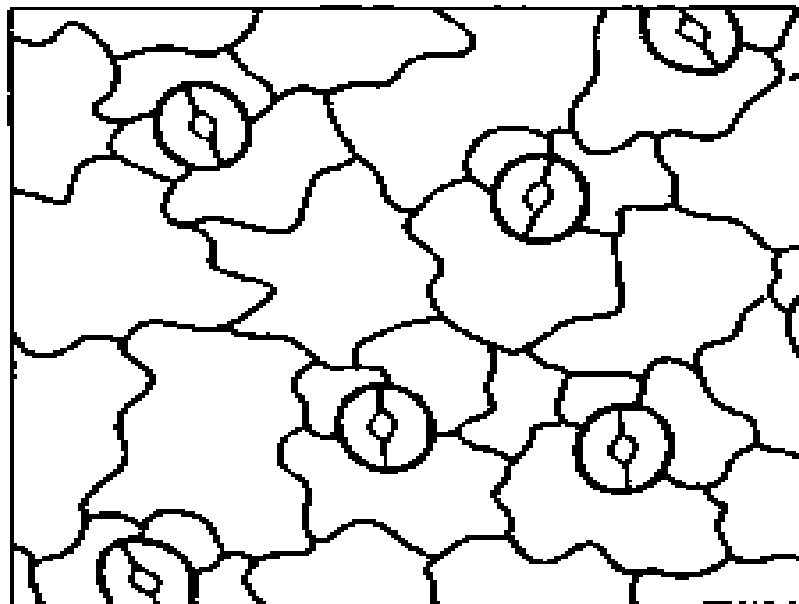
Surrounded by varying number of cells which are not differentiated from those of the epidermis



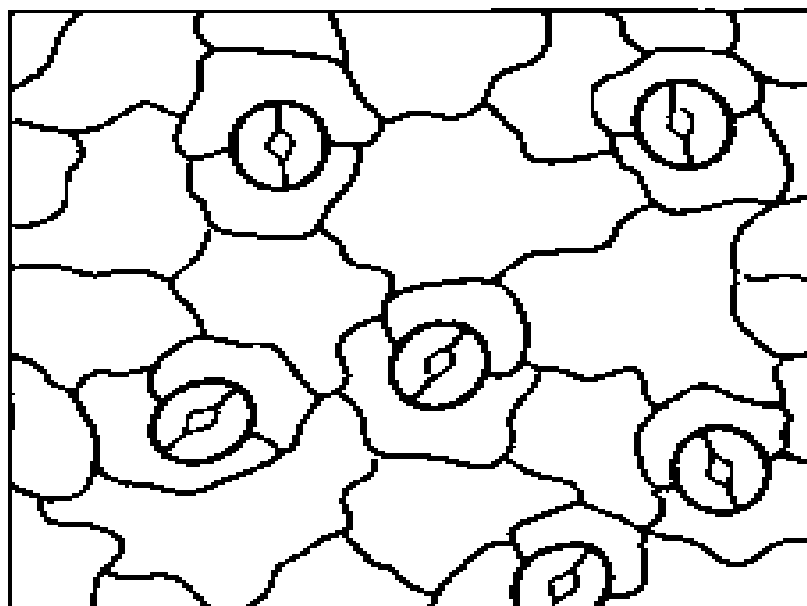
a



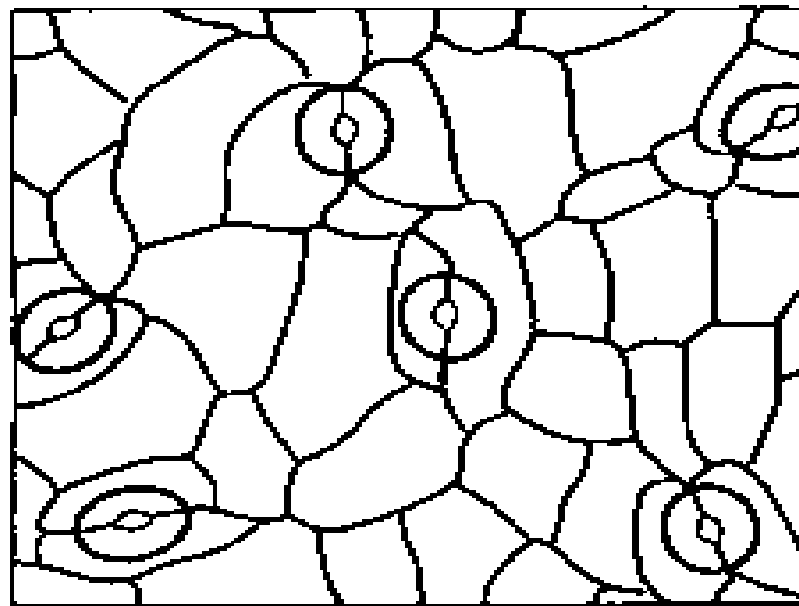
b



c



d

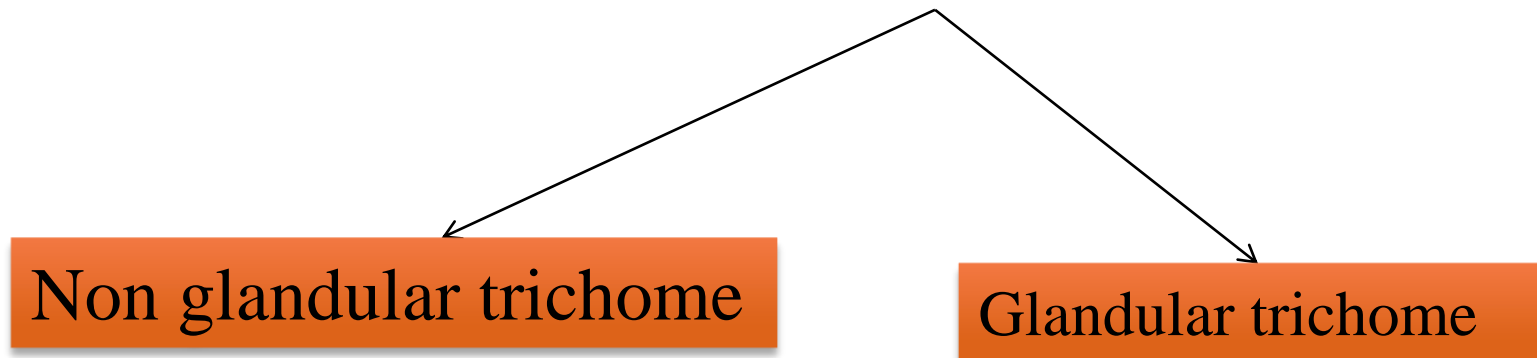


# Trichomes

- ▶ Trichomes are more elongated outgrowths of one or more epidermal cells which looks like hairs.
- ▶ protect the plant against intense illumination (i.e. strong sunlight) and excessive radiation of heat.
- ▶ may have secretory functions.

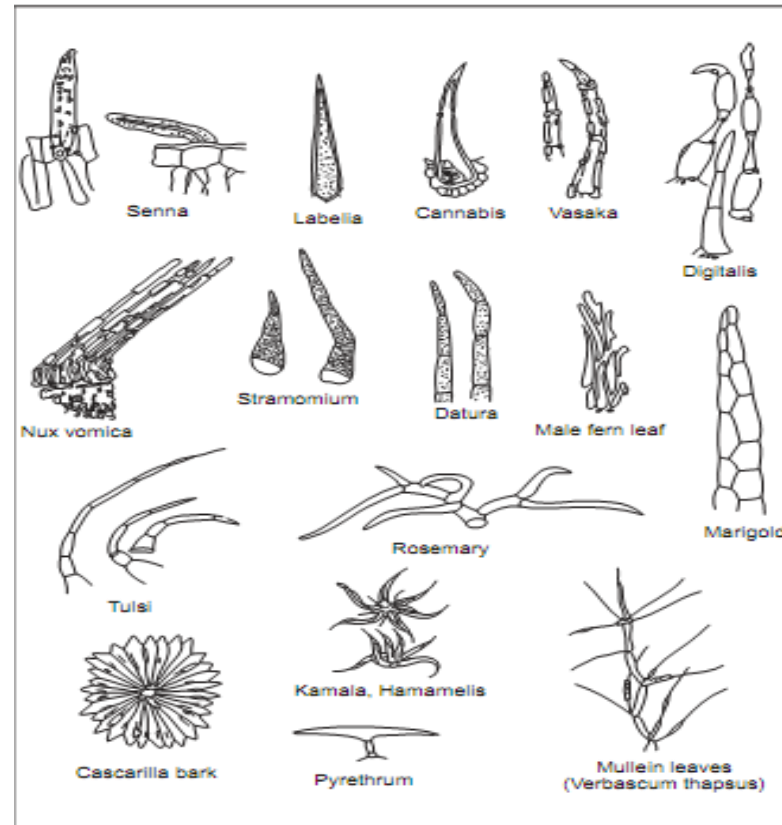


# Trichomes (hairs)

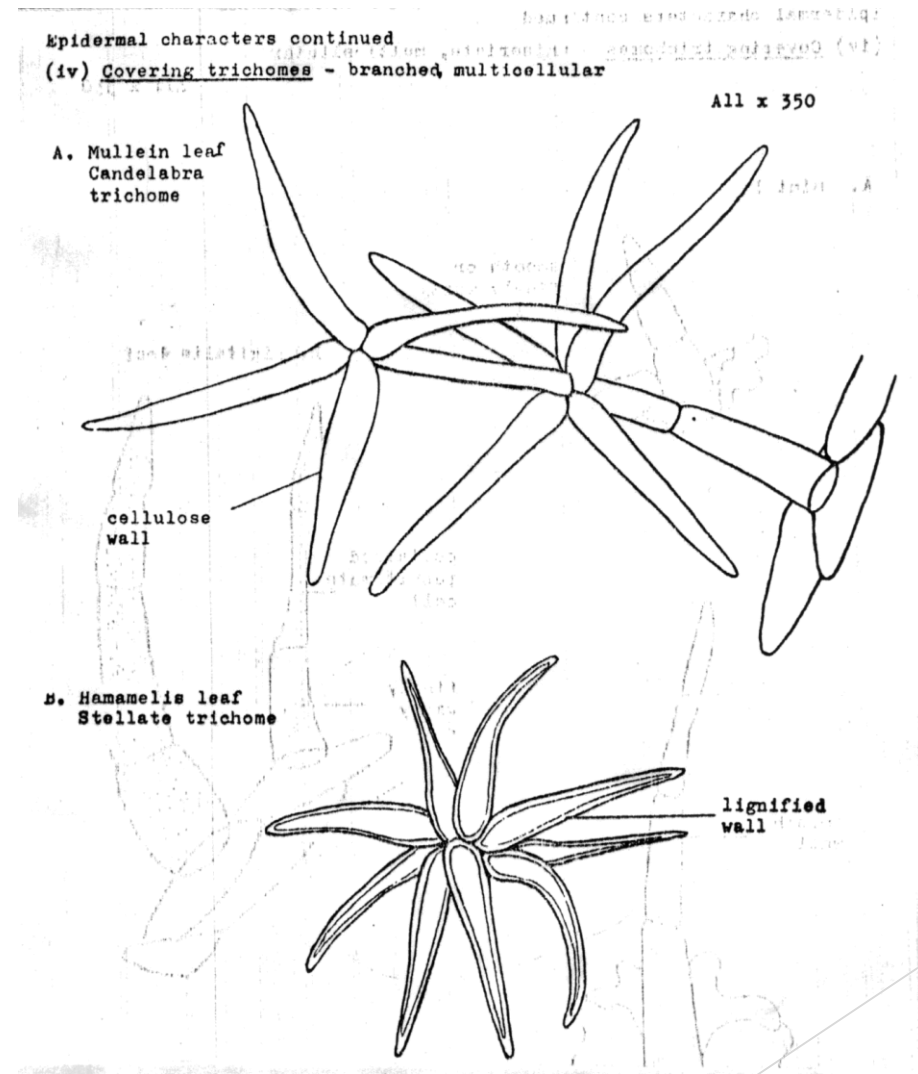
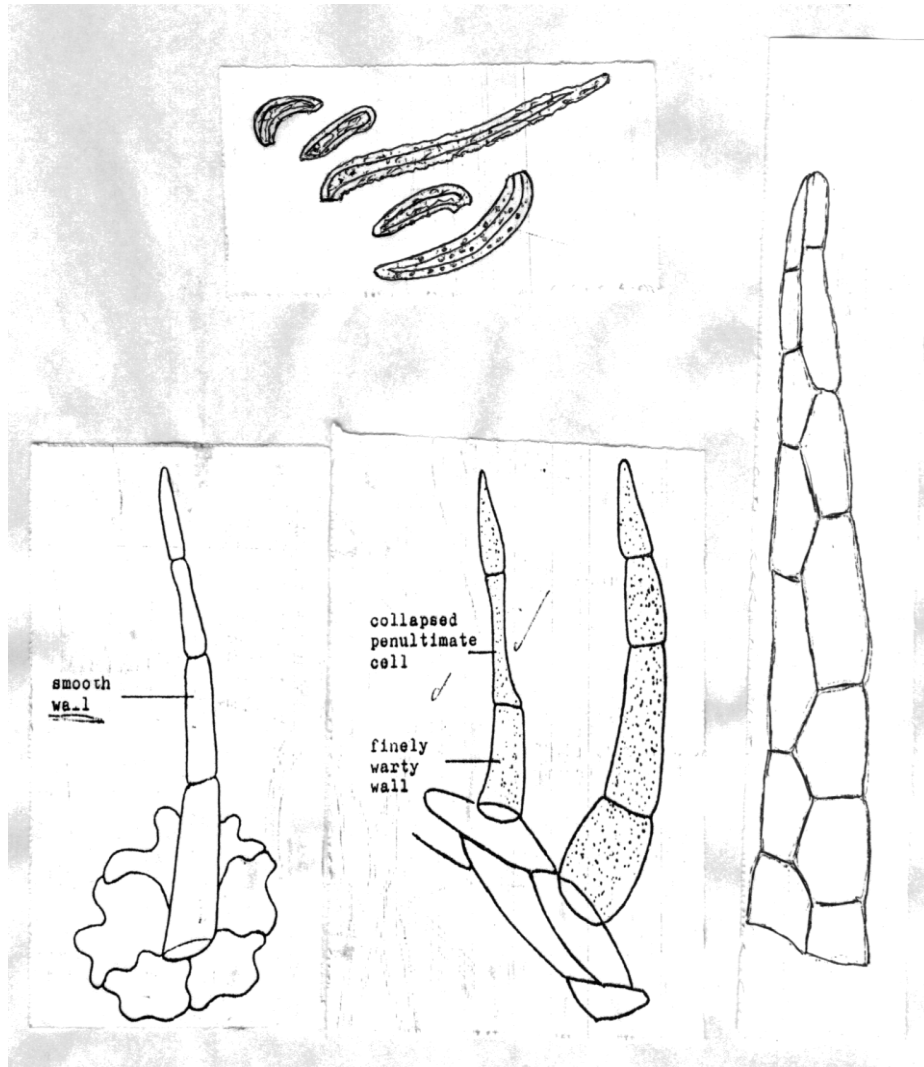


# Non-glandular hairs

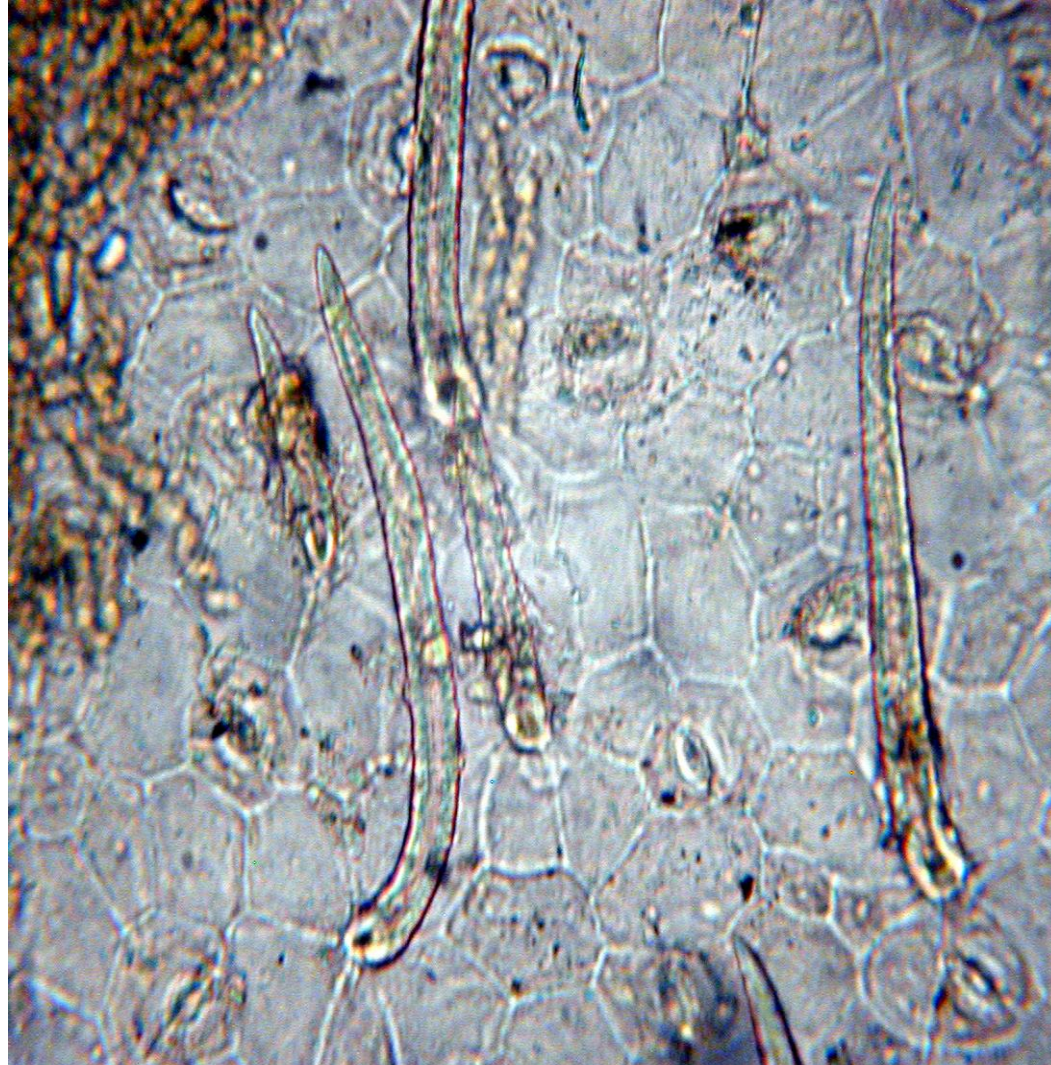
- a) Unicellular non-glandular trichome
- b) Multicellular uniseriate hair
- c) Multicellular Biseriate hair
- d) Multicellular stellate or branched hairs
- e) Multicellular candelabra hair



# Non glandular trichomes



# Unicellular tr.

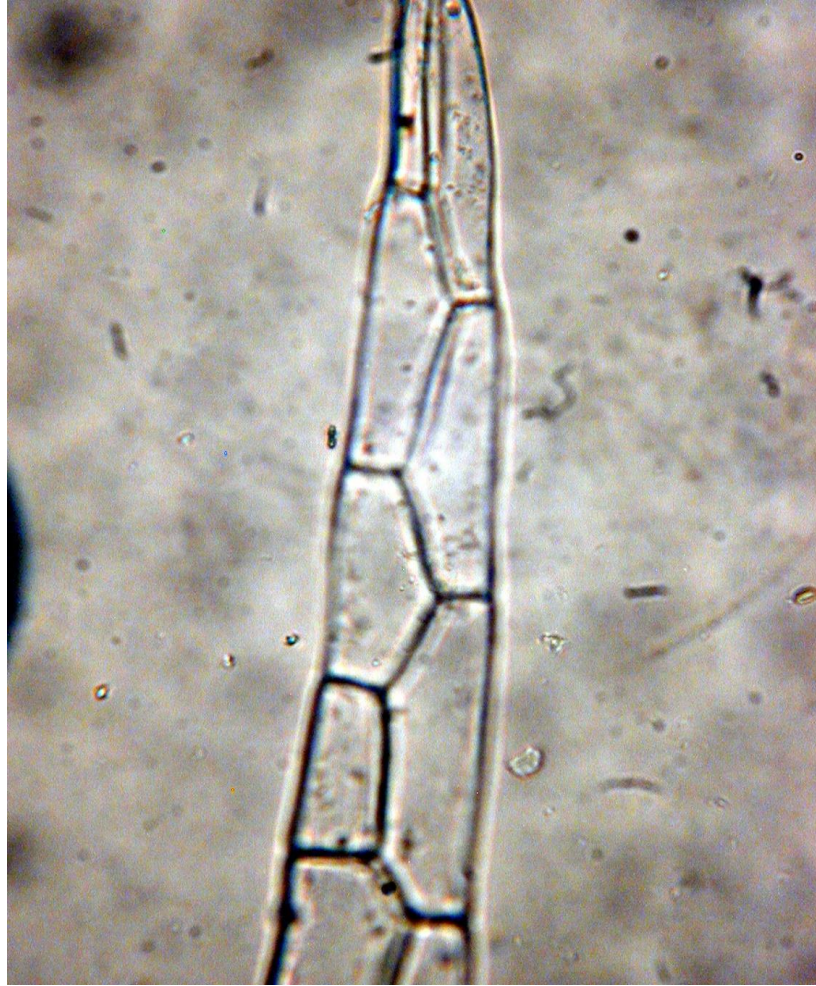




Multicellular uniseriate non gl. tr.



Multicellular biseriate non gl. Tr.





# Stellate tr.



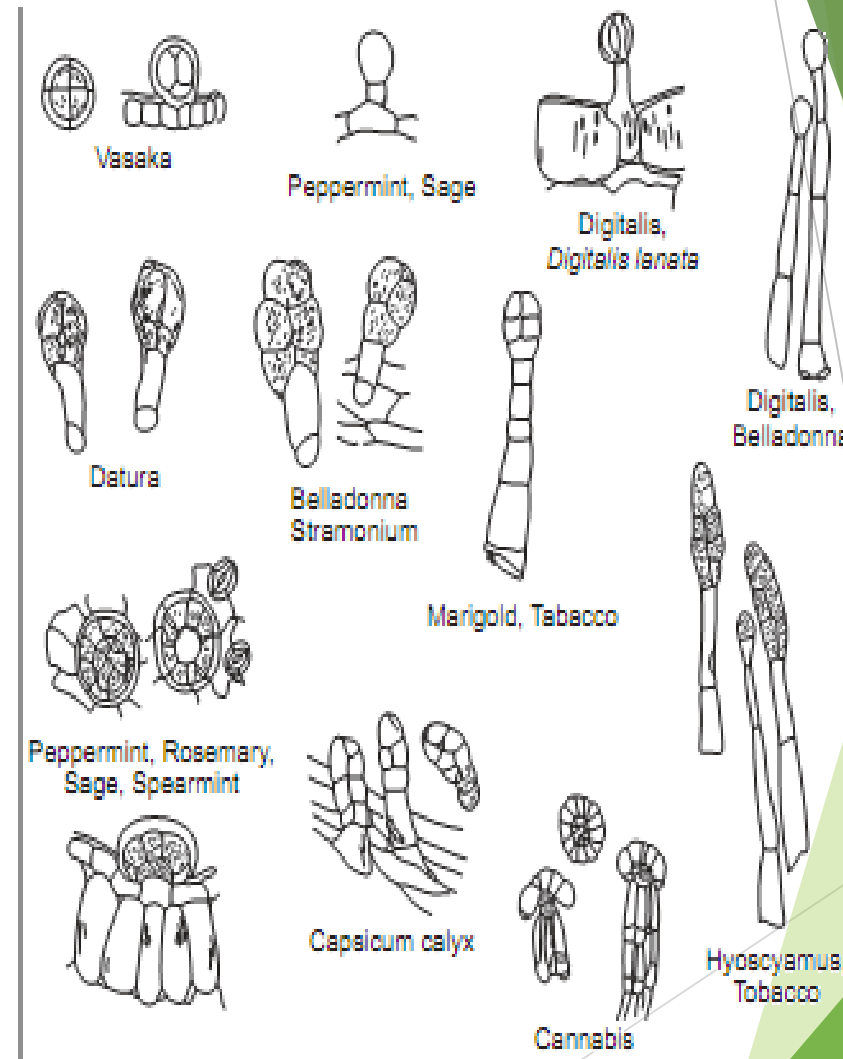
# Candelabra tr



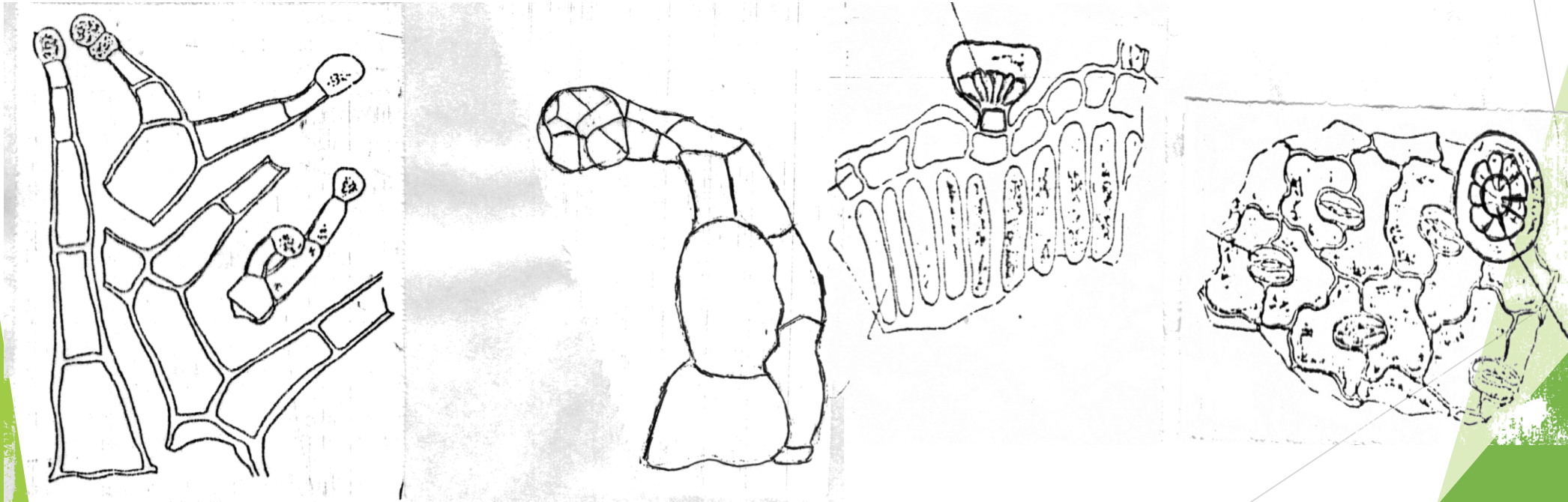
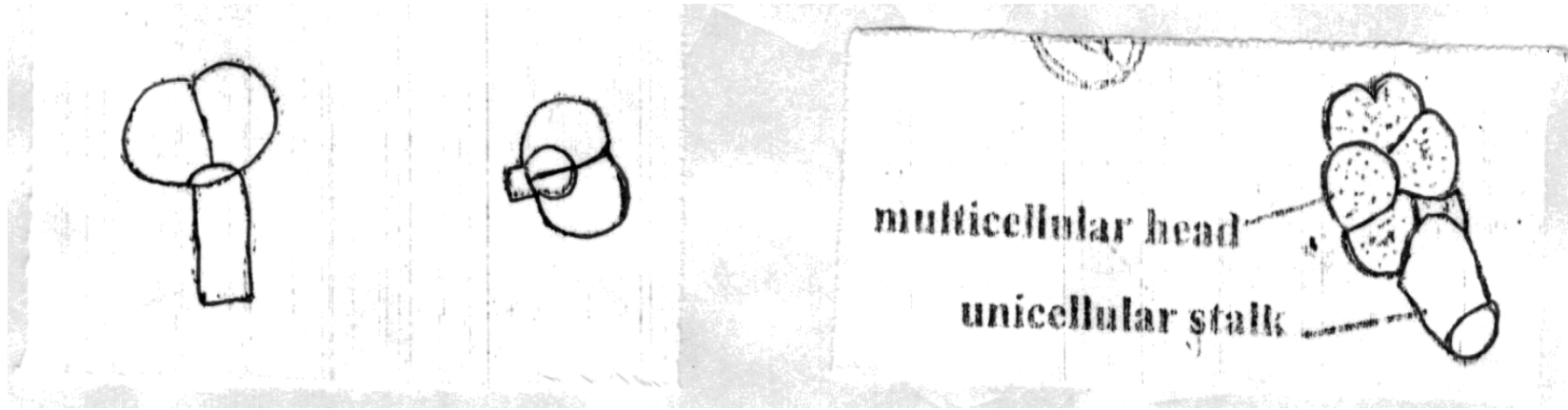


# Glandular trichomes

- ▶ Capitate trichome
- ▶ Bicapitate trichome
- ▶ Labiaceous hair
- ▶ Clavate trichome
- ▶ Branched glandular trichome



# Glandular trichomes

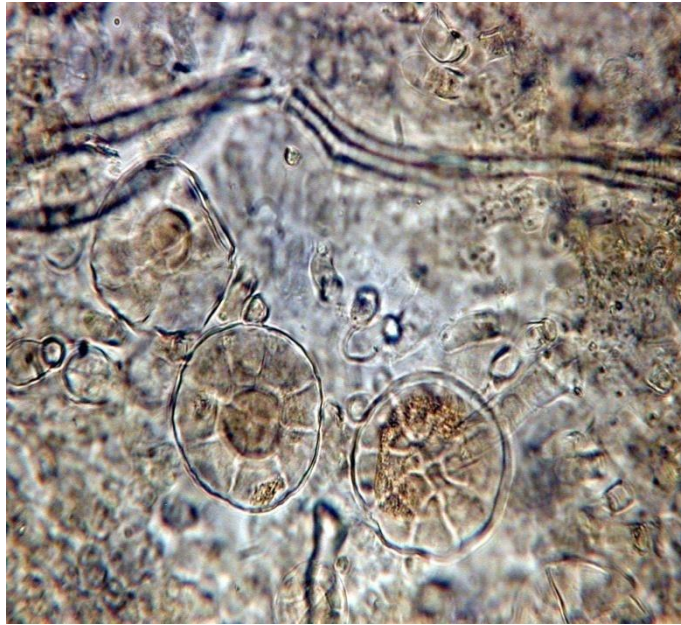


# Labiaceous tr

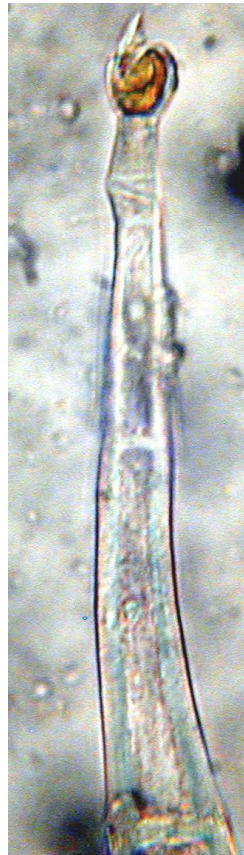
Side view



Top view



Multicellular stalk  
Unicellular head





# Clavate Hair

Multicellular  
biserriate ,Glandular  
.trichome

Like ice cream 😊



# Branched gl. Tr.



توزيع طلاب المستوى الأول الصيدلة الإكلينيكية

مادة النباتات الطبية

PG101

**معامل قسم Microbiology (First Floor)**

م	الموعد	Lab 14	Lab 15	Lab 10
١	10-12	مجموعة A 1-30	مجموعة A 31-60	مجموعة A 61-90
2	12-2	مجموعة B 91-120	مجموعة B 121-150	مجموعة B 151-للآخر

*Thank you*