

Experiment No.11:

Aim: To study of different types of stomata under microscope

Material required: Sharp razor, brush, dropper, needles, watch glass, microscopic slides, coverslips, safranin, glycerine and compound microscope.

Technique:

- Take 2-3cm long pieces of the leaf.
- Dip the cuticle in water.
- Then start peeling of the leaf cuticle
- Take the cuticle with the help of a delicate brush and transfer to a clean watch glass with water
- Put a few drops of safranin stain in the watch glass with water.
- Leave it for 3-5 minutes.
- Drain off stain and wash with water if necessary.
- Put the cuticle in the centre of the slide.
- Put a drop of glycerin over the material.
- Cover it with a coverslip with the help of needle.
- Observe it under a compound microscope after staining and mounting.

Study under the microscope: Focus the slide under lower of microscope and then change to high power if needed

Precautions:

3. Safranin is to be used to stain only the lignified tissues, over staining can be removed by washing in water.
4. Air bubbles must be avoided in the sections.
5. Use only brush to transfer or to handle the sections. Do not use needles for this purpose.

6. Discard the incomplete and oblique sections.

Identifying Characters:

Types of Stomata

- Stomata are classified based on the strength of their cluster and the subsidiary cells that surround them:

Anomocytic Stomata

- Commonly known as the irregular-celled type or ranunculaceous cells, Anomocytic stomata are surrounded by cells that are not much different from other epidermal layers as far as their size and shape are concerned. A Stoma is not surrounded by a definite number or arrangement of cells; it appears to be embedded in the epidermal cells.

Anisocytic Stomata

- An Anisocytic Stomata is surrounded by three lopsided subsidiary cells, where one is distinctly smaller than the other two; Anisocytic stomata is also known as cruciferous or unequal celled type stomata.

Paracytic Stomata

- Also called parallel-celled type or rubiaceous cells, Paracytic Stomata are accompanied on each side by one or more subsidiary cells; the longitudinal axes of these subsidiary cells lie parallel to the aperture of the guard cells.

Diacytic Stomata

- A pair of subsidiary cells surround Diacytic stomata; the walls of these subsidiary cells lie at right angles to the guard cells; They are also called caryophyllaceous or cross-walled stomata.

Gramineous Stomata

- Gramineous stomata possess two guard cells shaped like dumbbells; each guard cell consists of a narrow middle portion and two bulbous ends. The narrow central part is sturdy and thickened; the subsidiary cells are parallel to the long axis of the pore.

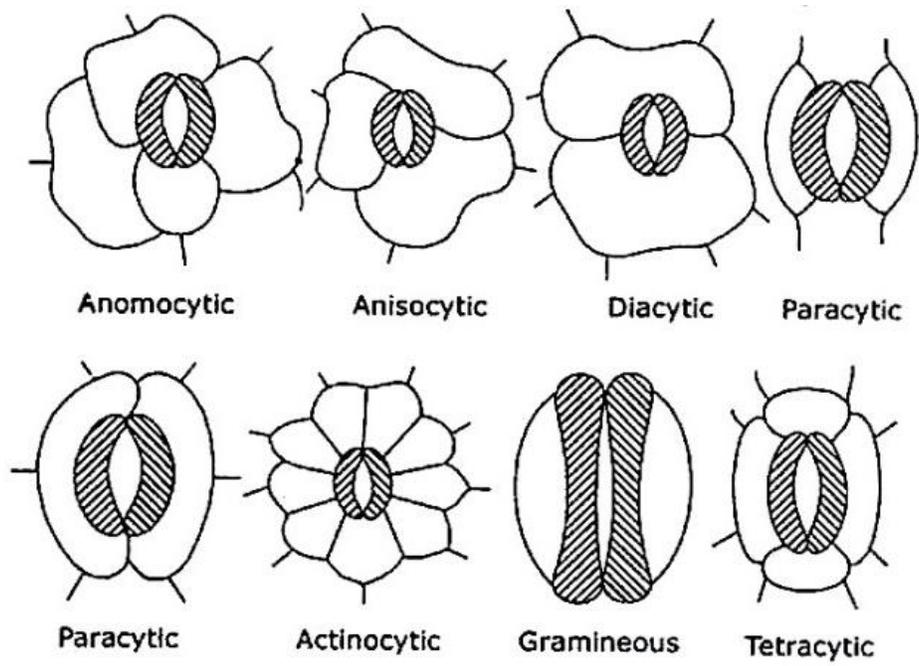


Fig. 1. Different types of stomata