

Aim

To prepare a temporary mount of a leaf peel to show stomata.

Theory

- Plants need oxygen for respiration and carbon dioxide for photosynthesis. The exchange of gases in plants occurs through the surface of stems, roots and leaves.
- On leaves there are plenty of small tiny pores called stomata.
- On the dorsal side of leaf more stomatal pores are present than the ventral surface of leaf.
- Through these pores, plants can also lose water by the process called transpiration.
- To avoid excess loss of water, the stomata pores closes and when gases are required, these pores open.
- This opening and closing of pores is monitored by guard cells.
- The guard cells swell when water flows into them, causing the stoma pore to open. When

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- the guard cells shrink the stomata pores close.
- The guard cells contain chloroplast and nucleus in it. They are bean-shaped in dicots and dumb-bell shaped in monocots.

Materials Required

Freshly plucked leaf of Rhea or Tradescantia, petri dish, glass slide, coverslip, needle, forceps, brush, dropper, watch glass, filter paper, glycerine, safranin solution and microscope.

Procedure

1. Take a freshly leaf (Rhea or Tradescantia).
2. Stretch the leaf with dorsal (lower) part facing upwards.
3. Break the leaf by applying suitable pressure so that the epidermis projects from the leaf.
4. Cut the epidermis and put it in a petri dish.
5. Take a watch glass, add ~~a few~~ few drops of water and a drop of stain in it.
6. Transfer the small piece of epidermis from petri dish into the watch glass with the help of brush.

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7. → Allow the peel to remain in the stain for 2-3 minutes, so that it can take up the stain.
8. → With the help of brush transfer the stained peel into a petri dish with water to remove the extra stain.
9. → Now take a clean slide and place it on a filter paper. In the centre of the slide put a drop of glycerine and transfer the stained from petri dish on the slide.
10. → Gently hold the coverslip with the needle and place it on the peel. Avoid air bubbles formation.
11. → Use the filter paper to clean the excess stain water or glycerine that comes out from the coverslip sides.
12. → Ensure that the slide is clean and place it under the microscope. First view it under low power ($10\times$) and then under high power ($45\times$).

Observation

- 1 → In an epidermal peel we see single layer of cells.
- 2 → In between the epidermal layer small spots are seen.
- 3 → When focused under powerful ~~microscope~~ the stomata pores are clearly seen.
- 4 → Each Stomata pore has two kidney - shaped cells called guard cells.
- 5 → Each guard cell has one nucleus and many chloroplasts.

Conclusion

Epidermal layer of leaf peel has many stomata pores. Each stomatal pore has two kidney shaped guard cells , in dicots plants. Each guard cell has one nucleus and many chloroplasts.

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Precautions

1. → While removing the epidermal peel, ensure that you pluck the thinner scrap of leaf.
2. → Do not overstain the peel.
3. → Avoid air-bubbles formation while placing the coverslip.
4. → The peel should not be folded.
5. → The slide should be clean and dry before placing it under microscope.