

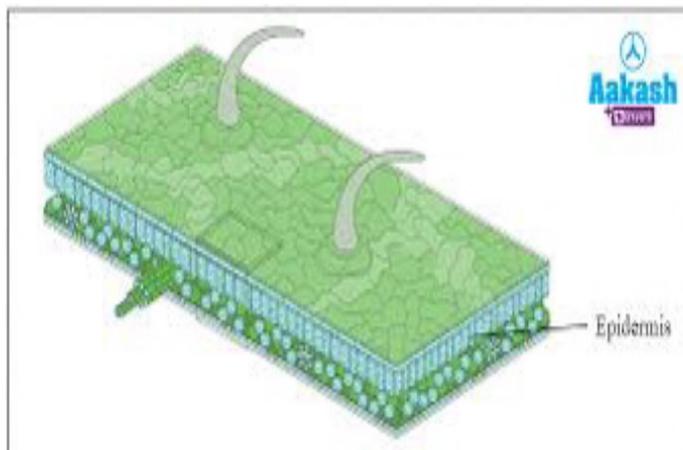
Plant cell organisation

- plant cells are made up of organs like stem, root and leaves
- These organs work together and form an organ system
- These organ systems perform different tasks that plants need to grow
- For example transportation of substances

Plant Tissues

1- Epidermal tissue.

- It has a waxy cuticle and covers all the plant.
- Upper epidermis is transparent so all light can make its way through
- This covers the plant to decrease water loss by evaporation.



2- Palisade mesophyll.

- Photosynthesis occurs in the **palisade mesophyll**.
- it contains many chloroplasts, which are situated close to the top of the leaf, allowing it to receive the most light possible.

3- spongy mesophyll.

- It is the area where gas exchange occurs.
- It also has some chloroplasts.
- There are gaps between the cells to provide a greater surface area for gas exchange.

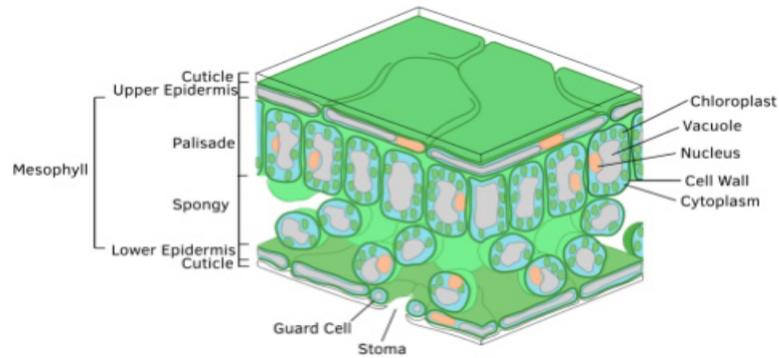
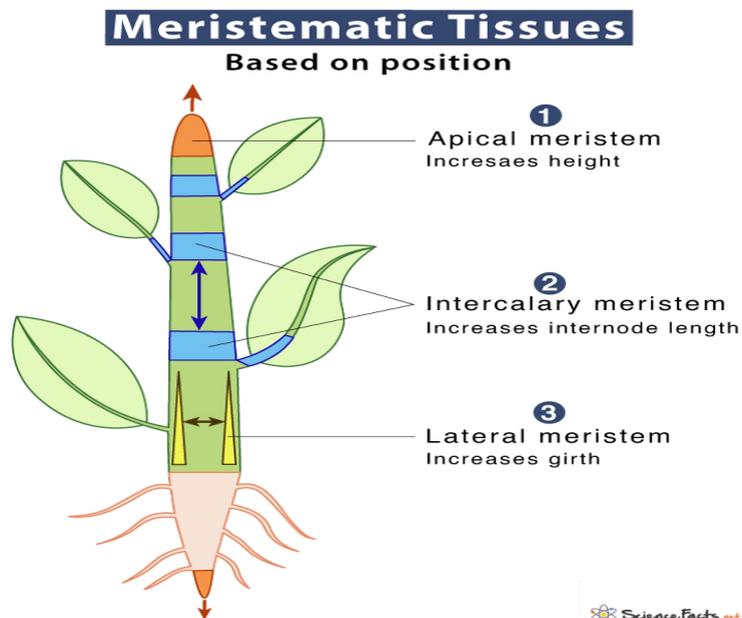


Fig 1. Plant Tissue.

4- Meristem tissue

- a) growing tip of root and shoot
- b) it is the place where cell division and differentiation occurs



5- Xylem Tissues

- a) **Spiral shape** – the spiral shaped buildup of lignin in the xylem cell walls kills the tissue. This then leaves hollow tubes for the water and mineral ions to move through, from the roots upwards.
- b) **Lignin** – The lignin dead cells strengthen the xylem, aiding its job as support.
- c) The xylem provides support for the plant and aids the movement of mineral ions and water from the roots to the leaves and stem of the plant.

6- phloem tissue:

- Sieve plate** – the phloem cell walls form a sieve plate, as they disintegrate. These sieve plates allow the movement of food.
- Companion cells** – phloem is kept alive by companion cells, which have mitochondria for energy transfer. This energy is used to move the food through the phloem.
- xylem transports water and mineral ions, the phloem uses energy to transport sucrose and the products of photosynthesis through the plant.

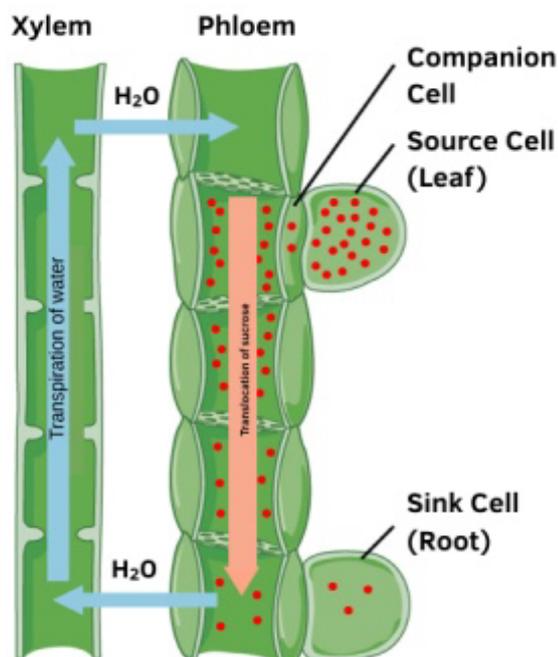


Fig 6. The Structure of Xylem and Phloem.