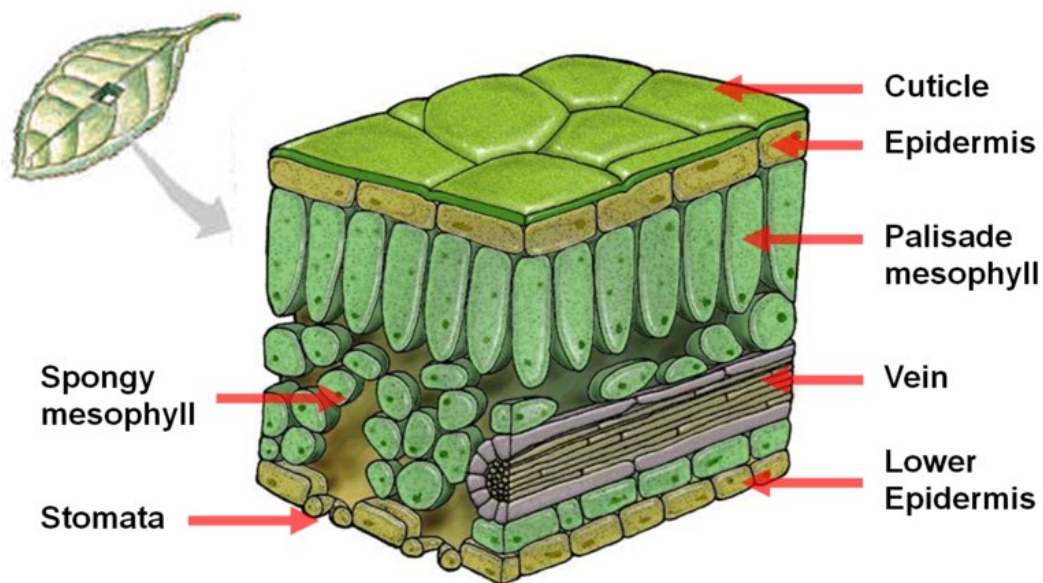


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## Leaf Structure Information Sheet



<https://www.pathwayz.org/Tree/Plain/CROSS+SECTION+OF+A+LEAF+%5BBASIC%5D>

**Cuticle:** A waxy layer that prevent water loss by evaporation. The cuticle is transparent and very thin to allow maximum light penetration.

**Upper Epidermis:** A protective layer of cells that produces the cuticle. The epidermis is also transparent and very thin to allow maximum light penetration.

**Palisade Mesophyll:** Rod shaped cells that contain large numbers of chloroplasts for photosynthesis. These cells are located close to the leaf surface to maximize light absorption. They are upright, elongated and tightly packed together in order to increase the surface area for light absorption. Chloroplasts are found near the palisade cell surface to maximize light absorption and to reduce the distance that carbon dioxide and oxygen have to diffuse (to / from the chloroplast stoma)

**Spongy Mesophyll:** These cells are smaller than those of the palisade mesophyll and are found in the lower part of the leaf. They also contain chloroplasts, but not quite as many. These cells have large air spaces between them that allow carbon dioxide and oxygen to diffuse between them. The air spaces also give these cells a large surface area to maximize the diffusion of carbon dioxide into the cell and oxygen out of the cell.

**Vein:** Plant veins consists of *xylem* (vessels that carry water) and *phloem* (vessels that carry dissolved nutrients such as sugar). These vessels play an essential role in transporting water to the chloroplasts in the mesophyll tissues for photosynthesis. They also transport the sugar produced by photosynthesis away from these cells to the rest of the plant tissues to be used as an energy source or stored.

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**Lower Epidermis:** A protective layer of cells. The lower epidermis produces a waxy cuticle too in some plant species. The lower epidermis contains pores called stomata that allow carbon dioxide and oxygen to move in and out of the plant respectively.

**Stomata:** Tiny pores (small holes) surrounded by a pair of sausage shaped guard cells. These cells can change shape in order to close the pore. In very hot conditions water inside the leaf evaporates and the water vapor can escape through the stomata. Closing them prevent reduces water loss, but also limits the diffusion of carbon dioxide and oxygen in and out of the leaf.