Stomata generally open in the light and close in the dark. Under sunlight, the guard cells photosynthesize to convert light to chemical energy. The chemical energy is used to pump potassium ions into the guard cells from neighbouring epidermal cells. Water potential of the guard cells is lowered. Water from neighbouring epidermal cells then enters guard cells via osmosis. This increases the turgidity of the guard cells and causes them to become swollen. The guard cells have a thicker cell wall on one side of the cell, causing the swollen guard cells to become more and more curved and pull the stoma open. When they are turgid, more carbon dioxide and oxygen enter the stomata. At night, the potassium ions accumulated during the day diffuse out of the guard cells. Water potential in the guard cells increase and water leaves via osmosis. The guard cells become flaccid and the stoma closes. Thus, the guard cells can regulate the rate of diffusion of gases in and out of the leaf. Stomata can close to reduce water loss even when the plant is in sunlight. In such situations, the excess evaporation of water causes the guard cells to become flaccid. The stomatal pores close. As the guard cells control the opening and closing, they regulate movement if gases in and out of the leaf.

Transport of raw materials

- Carbon Dioxide- In daylight when photosynthesis occurs, the carbon dioxide in the leaf is rapidly used up and the carbon dioxide concentration lowers than that of the atmosphere, allowing carbon dioxide from the surrounding to diffuse in. The surfaces of the leaves are covered by a thin film of water so that carbon dioxide can dissolve in. The dissolved carbon dioxide then diffuses into the cells.
- Water- The xylem transports water and dissolved mineral salts to the leaf from the roots. Once out of the veins, the water and mineral salts move from cell to cell right through the mesophyll.