



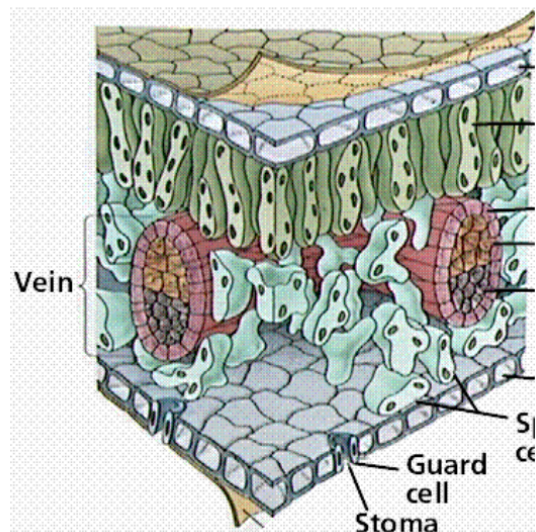
Leaf Anatomy

Objectives:

- Identify the leaf as one of the 4 major organs of a plant.
- Identify the major tissues that make up a leaf and identify their functions.

A process in which plants use sunlight to
Leaf make sugars!

- Photosynthetic organ of the plant.
- Produces food in the form of simple sugars. (Glucose)

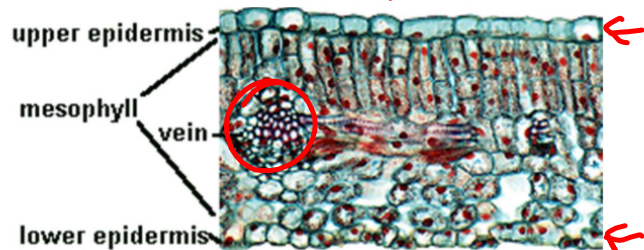


Leaf Structure and Anatomy

- The leaf has three types of tissue:

- **epidermis** -- the outermost cell layer of both leaf surfaces.
- **mesophyll** -- the cell layers filling the space between the upper and lower epidermis
- **vascular tissue** (veins) -- Transport materials and support the leaf.

Function: Protects & Prevents water loss.



Epidermis

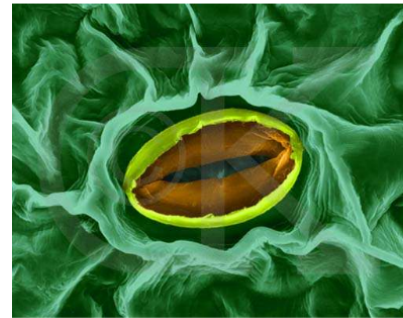
- The epidermis is usually a single layer of cells covered by a waxy cuticle.
- The cuticle functions as a barrier to water loss.



Epidermis

- The lower epidermis differs from the upper epidermis in having a much larger number of **stomata** or pores, that connect to air spaces in the mesophyll.
- The stomata are bounded by two specialized epidermal cells called **guard cells**.
- The size of the stoma is controlled by changes in the shape of the guard cells. Therefore, the guard cells can regulate the exchange of gases between the air and the leaf.

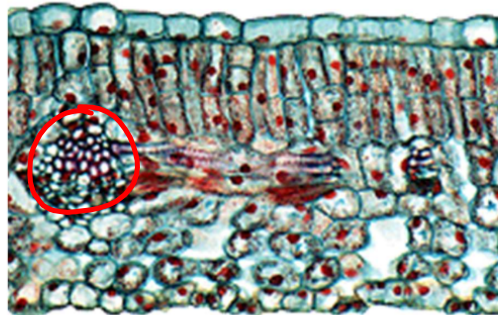
Pore that allows for exchange of gases in the leaf.



controls the opening and closing of the stoma.

Mesophyll

- The **mesophyll** is composed of cells which contain numerous chloroplasts and function as the site of photosynthesis.



meso - middle

photosynthesis

palisade mesophyll

spongy mesophyll

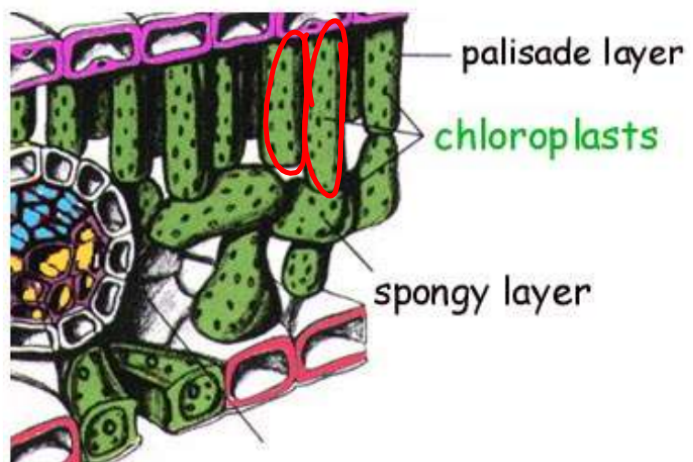
gas exchange

Mesophyll

- The **palisade** *photosynthesis site.*

mesophyll is located immediately below the upper epidermis, and has elongated cells that are closely packed together.

- The **spongy** **mesophyll** is loosely arranged and contain numerous air spaces that allow the exchange of gases with the air.



Transports
food (sugar)

Vein

VASCULAR
TISSUE

The veins are composed of **xylem** and **phloem**. The

xylem lies closest to the upper epidermis; the phloem is located below the xylem, closest to the lower epidermis.

