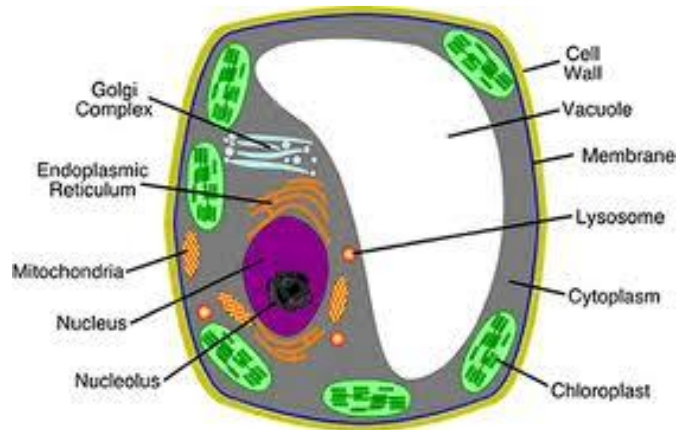
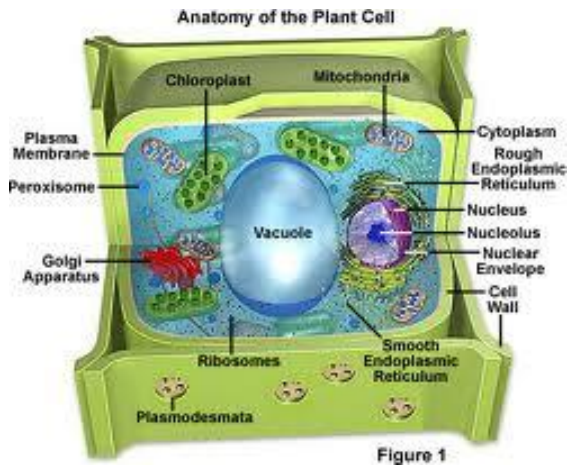


Levels of Organization to produce a functioning plant

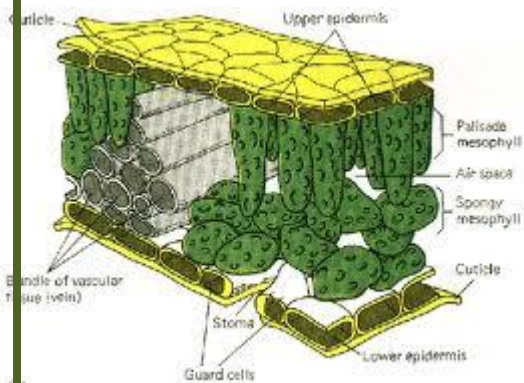
I. Plant cells- the basic building blocks.

- A. each cell is approximately 1/10- 1/100th of a millimeter long
- B. cells can specialize in form and function to provide certain specialized functions to the whole plant
- C. Each cell can live on its own under certain conditions- however, by working together they provide a way to survive in more varied conditions



II. Plant tissues- collections of similar cells that serve a specific purpose by functioning together

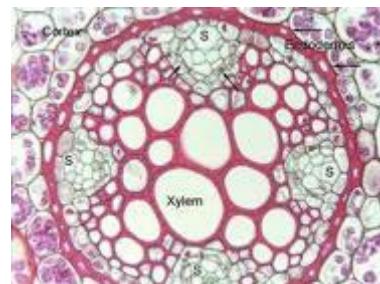
- A. Unlike animals, the major organs of plants (roots, stems, and leaves) are all composed of the same three tissues (epidermis, vascular tissues, and ground tissues).
- B. Each tissue carries out the same fundamental activities throughout the plant.
- C. Three types of tissues



1. Epidermis - the exchange of matter between the plant and the environment.

- a. the epidermis on aboveground organs (leaves and stems) is involved with gas exchange
- b. the epidermis on belowground organs (roots) is involved with water and ion uptake

2. **Vascular tissues** - the transport of water and dissolved substances inside the plant
 - a. the xylem carries water and dissolved ions from the roots to stems and leaves
 - b. the phloem carries dissolved sugars from the leaves to all other parts of the plant



3. **Ground tissues** - metabolism, storage, and support activities
 - a. the ground tissue of the leaf (called mesophyll) uses the energy in sunlight to synthesize sugars in a process known as photosynthesis
 - b. the ground tissue of the stem (called pith and cortex) develops support cells to hold the young plant upright
 - c. the ground tissue of the root (also called cortex) often stores energy- rich carbohydrates