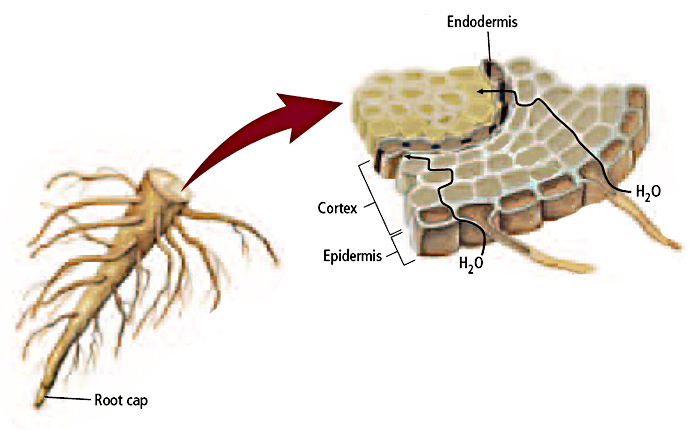
Honors Biology Chapter 22 Part 2 Student Notes

Roots

* The root is usually the first structure to grow out of the seed when it sprouts.
* Roots take in water and dissolved minerals that are transported to the rest of the plant.
* Functions:
  + Take in water & dissolve minerals
  + Anchor the plant
  + Support plant against effects of gravity, extreme wind, and moving water.

Root Structure and Growth

* The tip of a root is covered by the root cap-protect root tissue as root grows (has parenchyma cells).
* The layer below the epidermal layer is the cortex-made up of ground tissue (has parenchyma cells).
* The layer of cells at the inner boundary of the cortex is the endodermis.



Types of Roots

* Taproot system
* Consists of a thick root with a few smaller, lateral-branching roots
* Ex: raddish. Beets, poison ivy
* Functions:
  + Anchor plants
  + Store food and water
* Fibrous root system
  + Numerous branching roots that are about the same size and grow from a central point
  + Ex: sweet patatoes
  + Functions
    - Anchor plants
    - Absorb a lot of water rapidly
* Modified roots
  + Huge water storage roots
  + Help supply oxygen
* Adventitious roots
  + Form where roots do not normally grow.
  + Support branches (ex: trunks)

Stem Structure and Function

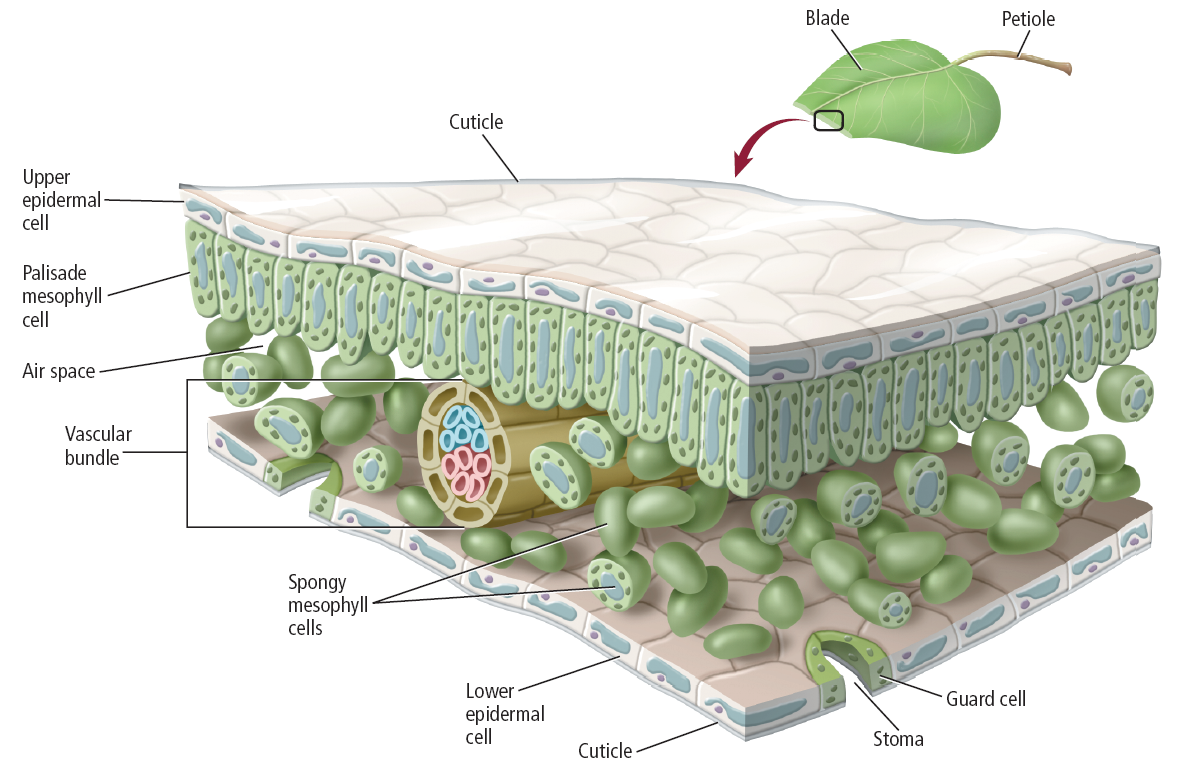
* The main function of a plant’s stem is support of a plant’s leaves and reproductive structures.
* Transport water and dissolved substances
* Stores food and water

Examples: Monots

Dicots

Leaf Structure

* A flattened surface called a blade has a large surface area for photosynthesis.
* The blade may be attached to the stem by a petiole.



* The internal structure of most leaves is well-adapted for photosynthesis.
* Tightly packed cells directly below a leaf’s upper epidermis contain many chloroplasts and make up the tissue called the palisade mesophyll.
* Below the palisade mesophyll is the spongy mesophyll.
* Spongy layer =irregularly shaped, loosely packed cells w/spaces
  + Cells contain some chloroplasts
  + Oxygen, carbon dioxide and water move through the spaces
* Simple leaf – blades are not divided into 2 or more smaller parts
* Compound leaf – blade is divided into 2 or more smaller parts called leaflets.



Leaf Modifications

* Spine – water loss and protection
* Sticky substances – trap insects
* Toxic chemicals – discourage organisms from touching them