Chapter 28-31
Plants

Accelerated Biology

2011-2012

Aligned to "Plant Kingdom Study Guide"

28.1 Overview of Plants

1. What three adaptations allowed plants to live on land?
   - Ability to prevent water loss
     - Cuticle – waxy protective covering
   - Ability to reproduce in the absence of water
     - Spores and seeds
   - Ability to absorb water and transport nutrients
     - Vascular tissue – internal system of connected tubes and vessels
2. What are two advantages to life on land for a plant?
   - More exposure to sunlight for photosynthesis
   - Increased carbon dioxide levels
   - Greater supply of inorganic nutrients

28.1 Overview of Plants

3. What is the difference between a spore and a seed?
   - Spore – haploid reproductive cell surrounded by a hard outer wall
   - Seed – embryo surrounded by a protective coat; also usually contains endosperm (nourishment for developing plants)

28.1 Overview of Plants

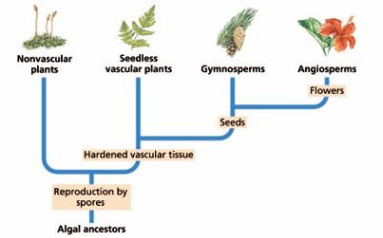
4. What purpose does vascular tissue serve for a plant?
   - Transports water and dissolved substances from one part of a plant to another; allows plants to grow taller!
5. Name and describe the function of the two types of vascular tissue found in vascular plants.
   - Xylem – carries water and inorganic nutrients from roots to stems and leaves
   - Phloem – carries organic compounds (from photosynthesis) from the leaves to the roots and stems

28.1 Overview of Plants

6. Plants are divided into two main groups: Division Bryophyta, or the nonvascular plants which do not have xylem and phloem (vascular tissues) and division Tracheophyta, or the vascular plants, which do have xylem and phloem (vascular tissue).

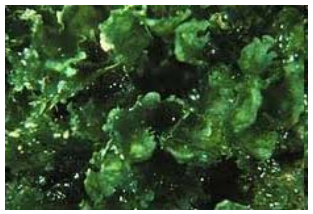
7. Vascular plants are further divided into the two groups of seeded and seedless vascular plants.

8. Plants with seeds are further divided into the two groups of gymnosperms and angiosperms.



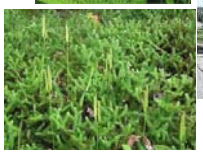
28.2 Non-Vascular Plants = Bryophytes

9. Give three examples of nonvascular plants:
   - Moss
   - Liverworts
   - Hornworts



28.3 Vascular Plants = Tracheophytes

10. Classify each of the following as seedless or seed plants.
    - Horsetails - SEEDLESS
    - Gingkos - SEEDED
    - Pine tree - SEEDED
    - Fern - SEEDLESS
    - Club moss - SEEDLESS
    - Cedar - SEEDED



28.3 Vascular Plants

11. Complete the following table that compares monocots and dicots.

Characteristic	Monocots	Dicots
# of cotyledons	One	Two
Pattern of Leaf Venation	Parallel	Net
Flower Parts	Multiples of three	Multiples of four or five
Example	Lily, tulip, bamboo, grass	Bean, rose, carnation, cactus

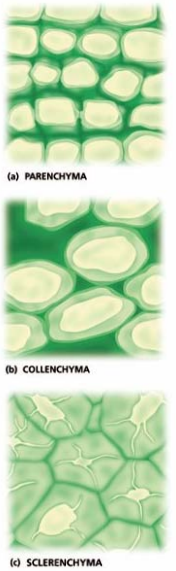
What is a cotyledon? Seed leaves in a plant embryo

TABLE 28-3 *Comparing Monocots and Dicots*

Plant type	Embryos	Leaves	Stems	Flower parts	Examples
Monocots	One cotyledon	Parallel venation	Scattered vascular bundles	Usually occur in threes	lilies, irises, orchids, palms, tulips, bananas, pineapples, onions, bamboo, coconut, grasses (including wheat, corn, rice, and oats)
Dicots	Two cotyledons	Net venation	Radially arranged vascular bundles	Usually occur in fours or fives	beans, lettuce, oaks, maples, elms, roses, carnations, cactuses, most broad-leaved forest trees

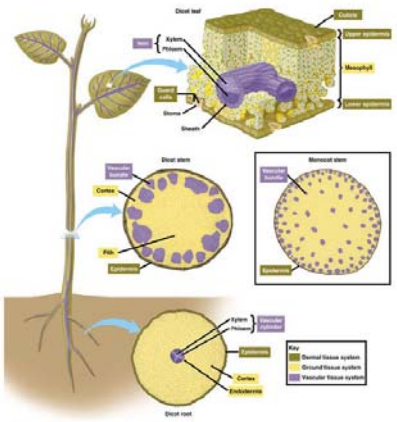
29.1 Plant Cells and Tissues

12. What are the three basic types of plant cells?
   - Parenchyma – used for photosynthesis
     - Loosely packed
     - Storage of water and nutrients
   - Collenchyma – used for support (in growing regions)
     - Thicker and uneven
   - Schlerenchyma – used for support (in non-growing regions)
     - Thick and even



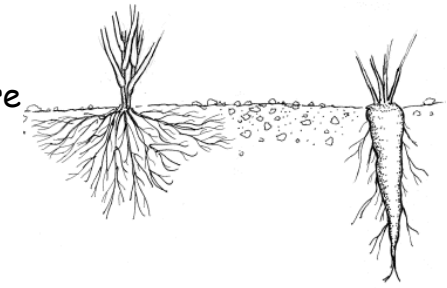
29.1 Plant Cells and Tissues

13. What are the three types of plant tissue systems and what are their functions?
   - Dermal - outside covering of the plant
     - Absorption, protection, gas exchange
   - Ground – storage, metabolism and support
   - Vascular – transport and support; makes up xylem and phloem!!



29.2 Roots

14. What are the three organs that vascular plants possess?
   - Roots, stems and leaves
15. The first root to grow out of a seed is called a primary root, which can grown into a taproot or can develop a fibrous root system where numerous roots branch off of it.

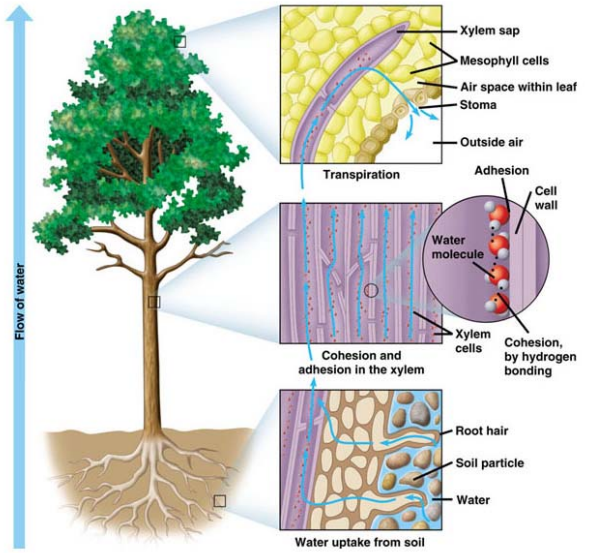


29.2 Roots

16. What are the three functions of roots?
    - Anchor plant to soil
    - Absorb and transport water and mineral nutrients
    - Store water and organic compounds

29.3 Stems

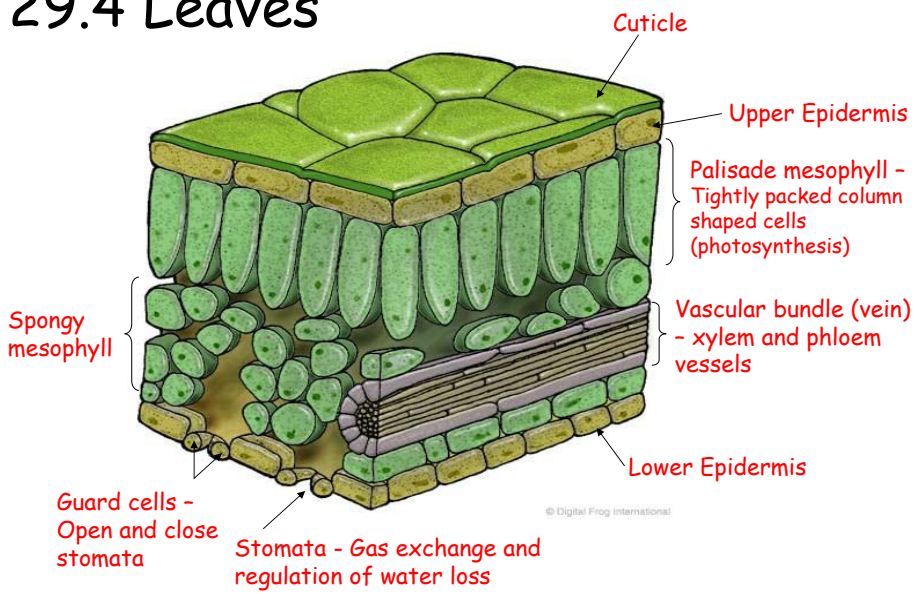
17. Movement of carbohydrates in a plant is called translocation - transport of food from leaf to the rest of the plant.
18. Loss of water from the plant is called transpiration.



29.4 Leaves

19. What are leaves specialized to do?
    - Capture sunlight for photosynthesis and exchange gases

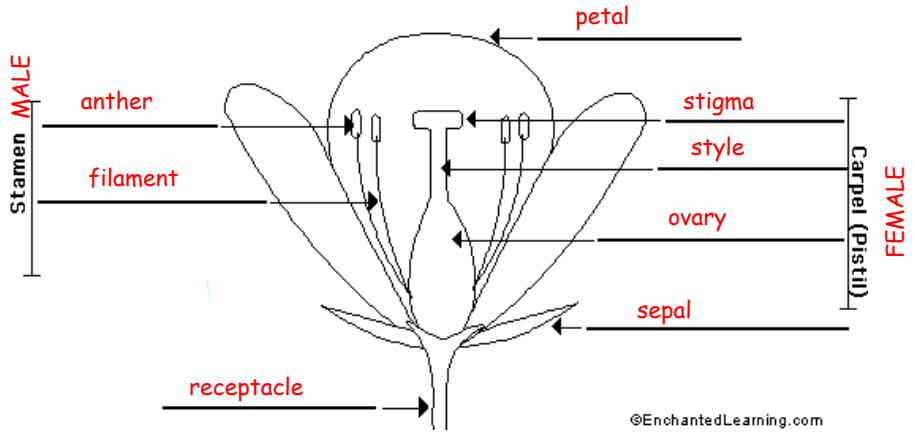
29.4 Leaves



29.4 Leaves

21. In which region of the leaf does the majority of photosynthesis occur?
    - Palisade mesophyll
22. What are stomata?
    - Openings in the leaf that allow for gas exchange and regulate water loss
23. What regulates when stomata open and close?
    - Guard cells (lower epidermis)
24. What time of day are stomata usually open? Closed?
    - Open during the day
    - Closed at night
    - Stomata can also close during the day if water is limited

30.2 Sexual Reproduction in Flowering Plants



30.2 Sexual Reproduction in Flowering Plants

PART	FUNCTION
Sepal	Leaflike structure that encloses the flower bud
Petals	Colored leaf of flower "ADVERTISEMENT"
Stamens	Male part of flower (anther + filament)
Anther	Produces pollen
Filament	Supports the anther
Pistil	Female part of flower (stigma + style + ovary)
Stigma	Sticky top where pollen grains are deposited
Style	Middle portion of pistil

30.2 Sexual Reproduction in Flowering Plants

27. After fertilization, what does the ovule become? Zygote
    What does the ripened ovary become? Fruit
28. What is the difference between self and cross pollination?
    - Self – involves one flower, flowers are on the same plant or flowers from two genetically identical plants
    - Cross – involves two genetically different flowers
29. What is the difference between pollination and fertilization?
    - Pollination – pollen is transferred from anther to stigma
    - Fertilization – union of haploid gametes

30.3 Dispersal and Propogation

30. What is germination? What causes a seed to germinate?
   - Germination – when the embryo begins to grow into a young plant; development of a seed into a seedling
   - Caused by → water, oxygen, temperature

31.1 Plant Hormones

Hormone	Functions
Ethylene	Promotes fruit ripening
Auxins	Promote cell, shoot and bud growth
Cytokinins	Promote cell division (cytokinesis)
Abscisic acid (ABA)	Promotes dormancy and blocks growth
Gibberellins (GA)	Promote cell elongation and germination

31.2 Plant Movements

Stimulus	Tropism
Touch	Thigmotropism (vines wrapping tendrils around object for support)
Light	Phototropism
Gravity	Gravitropism
Chemicals	Chemotropism