**Chapter 4 “Plants” Review Notes:**

Plants are autotrophs!

We know this because they make their own food AKA photosynthesis. Plants collect the energy they need for this from the sun.

Plants are multicellular!

We know this because plants are made of tissues-groups of similar cells that perform a specific function in an organism.

Plant cell are different from animal cells! The two biggest differences include the cell wall and chloroplasts:

Cell wall- separates the cell from the environment. The cell wall contains cellulose which makes it rigid.

Chloroplasts- where food is made (photosynthesis)

Vacuole (larger in plant cells)- stores food, water, and waste for the cell.

WATER IS IMPORTANT!

The cuticle & stomata of the leaf helps the plant retain (hold onto) water.

Transpiration- water loss through evaporation

Many plants need water **to reproduce** (joining of the sperm and egg cells)-**for some, this can only occur if there is water in the environment.**

**Characteristics of nonvascular plants:** Do not have vascular tissue for transporting materials, Low growing, Thin cell walls, Do not have roots

Example: MOSSES



**A: capsule-** contains spores **B: sporophyte** (capsule and stalk) **C: gametophyte** (leaf-like structures)

**D: rhizoids**- anchor the moss and absorb water & nutrients

\*\*Over time, mosses may compact into layers and form a material called **peat.**

Vascular tissues:

Xylem- moves water and nutrients

Phloem- moves food down from the leaves

The xylem is responsible for the age rings on a tree.

Seed plants-have vascular tissue and use pollen & seeds to reproduce.

**Types of seed plants:**

Gymnosperms- “naked” seed. (naked = not enclosed in fruit)

Angiosperms- flowering plants with seeds incased in fruit

Dicot- 2 seed leaf

Monocot- 1 seed leaf

Cot is short for COTYLEDON which means seed leaf.

Plant Life stages:

Sporophyte- produces spores

Gametophyte- produces sperm and egg cells (sex cells)

Fertilization- when the sperm and egg cells meet.

Vascular **seedless** plants- spread spores, NOT seeds

Example: Ferns

Ferns grow in damp and shady areas. They need water in order for the sperm cells to join the egg cells.

Too much sun will make the fern weaker and eventually die.

**Response and growth**

Tropism- a plants response toward (positive) or away (negative)

Thigmostropism- touch

Gravitropism- gravity

Phototropism- light

**Seasonal change**

length of night and day is photoperiodism

Darkness determines the flowering times of plants. Why we have spring only flowers, summer only, etc.

Dormancy- prepares plants for freezing temperatures and the lack of **liquid water.**