

## Basic Principles of Plant Science

- \_\_\_\_\_ are the structural basis of all living organisms.
- A **cell** is a tiny structure that forms the \_\_\_\_\_ of plants.
- All organisms are made of one or more cells.
- \_\_\_\_\_ in cells carries out life processes.
- Plants are \_\_\_\_\_, meaning that they have many cells.

- Some cells have

\_\_\_\_\_  
\_\_\_\_\_

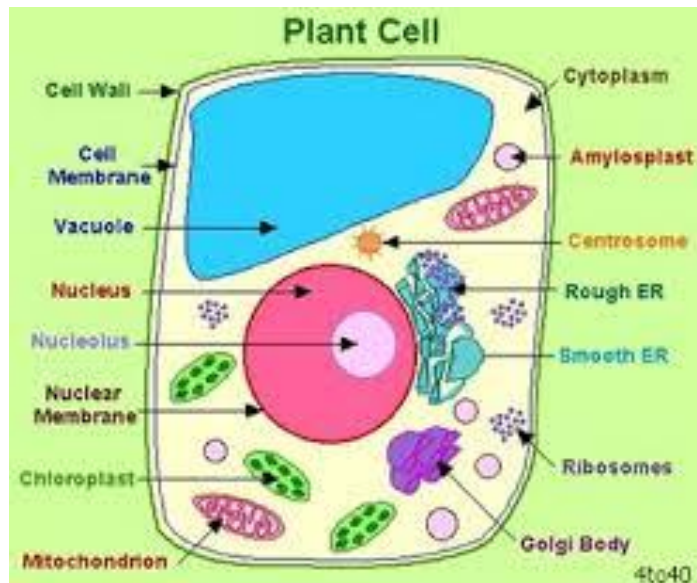
- **Cell specialization** is the presence of cells that perform unique activities for a plant.

- \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ are made of specialized cells.

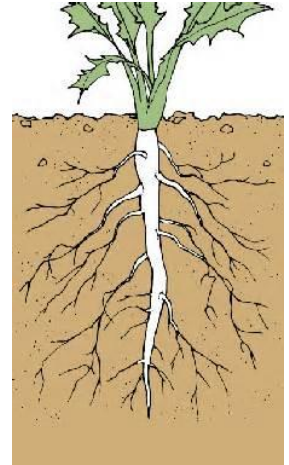
- Cells are formed into \_\_\_\_\_ that work together.

- \_\_\_\_\_ is formed by groups of cells that are alike in activity and structure.
- An \_\_\_\_\_ is formed by tissues that work together to perform specific functions.
- An organ \_\_\_\_\_ is a group of organs that works together to perform a function.

- Plant cells have three major parts: \_\_\_\_\_.
- The **cell wall** surrounds the cell and controls the \_\_\_\_\_ into and out of the cell. (mammal cells do not have cell walls – only cell membrane)
- The **nucleus** is near the center of a cell and contains protoplasm, chromosomes, and other structures that \_\_\_\_\_.
- The **cytoplasm** is a \_\_\_\_\_ inside the cell wall surrounding the nucleus.

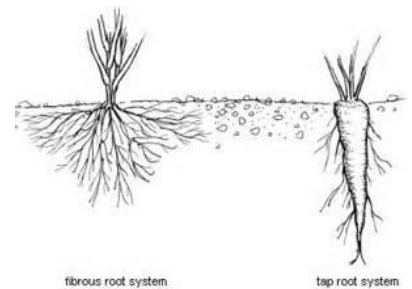


- Plant cells have many additional parts, including: \_\_\_\_\_, nucleolus, vacuole, mitochondria, and golgi body. (mammal cells do not contain chloroplast or plastids)
- Plants are comprised of \_\_\_\_\_ parts.
- The major **vegetative** parts of plants are \_\_\_\_\_.
- The major **reproductive** parts of plants are \_\_\_\_\_.
- Roots absorb \_\_\_\_\_ from the soil.
- Roots \_\_\_\_\_ the plant so that it can grow straight.
- Roots store food that is manufactured in the \_\_\_\_\_.
- **Primary Root** – \_\_\_\_\_
  - First part to emerge when germination occurs
- **Secondary Roots** – \_\_\_\_\_ off of the primary root



- **Root Hairs** – \_\_\_\_\_ found near the \_\_\_\_\_ of the root.
  - Greatly increase the \_\_\_\_\_ so more water and minerals can be absorbed.
- **Root Cap** – Mass of cells that \_\_\_\_\_ from coarse soil

- \_\_\_\_\_ – thick, main root that grows straight down with smaller roots branching off
- \_\_\_\_\_ – consists of numerous slender roots



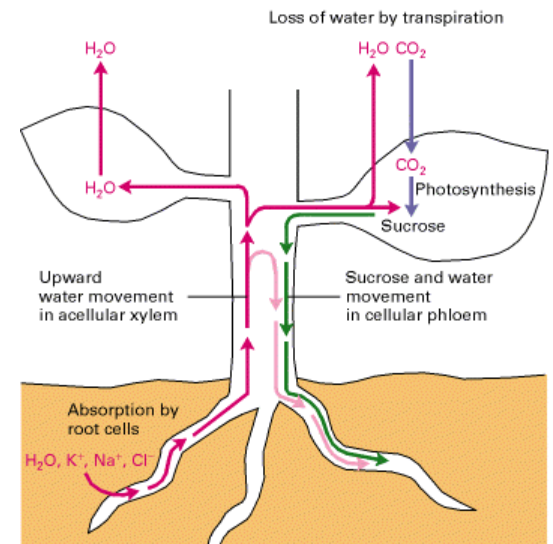
- A \_\_\_\_\_ is the central axis that supports the leaves, connects them with the roots, and transports water and other materials between the leaves and roots.
  - Stems \_\_\_\_\_ in appearance based on the species of plant.
  - Stems may be \_\_\_\_\_ and modified for climbing and to store water and food.
- The \_\_\_\_\_ of a plant is found in its stem.

- Water and minerals are transported from the roots to the leaves by the \_\_\_\_\_.
- Food made in the leaves are transported through the rest of the plant by the \_\_\_\_\_.
- Xylem and Phloem Tissues
  - Xylems transport \_\_\_\_\_ (nitrates) from the roots to the leaves
  - Phloem transport \_\_\_\_\_ (sucrose) from the leaves to all parts of the plant

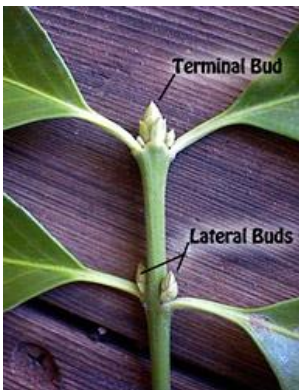
- Vascular Bundles

- Xylem and Phloem tissues are arranged in \_\_\_\_\_
- A \_\_\_\_\_ separates the xylems and phloem
- The cambium undergoes \_\_\_\_\_ to produce new xylems and phloem

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

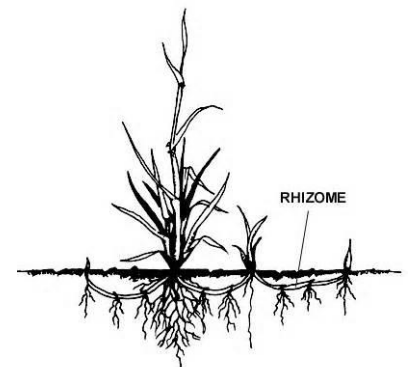


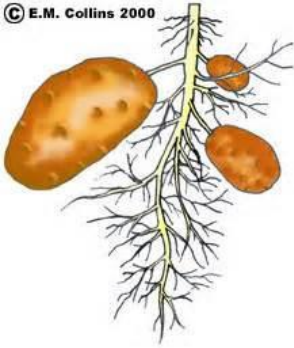
- Stems of woody plants have structures called \_\_\_\_\_.



- **Terminal Buds**
  - At the \_\_\_\_\_ of the stem
  - Contains the \_\_\_\_\_ which is the primary growing point
- **Lateral Buds**
  - Located on the \_\_\_\_\_ of the stem

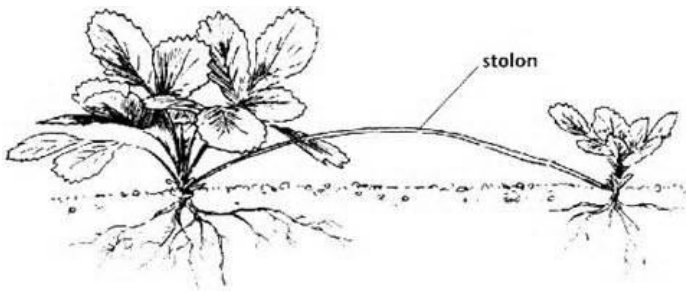
- \_\_\_\_\_ —A rhizome is an underground stem that grows \_\_\_\_\_.
- It may grow adventitious roots and stems to develop as a \_\_\_\_\_.
- Examples include iris and wild ginger.





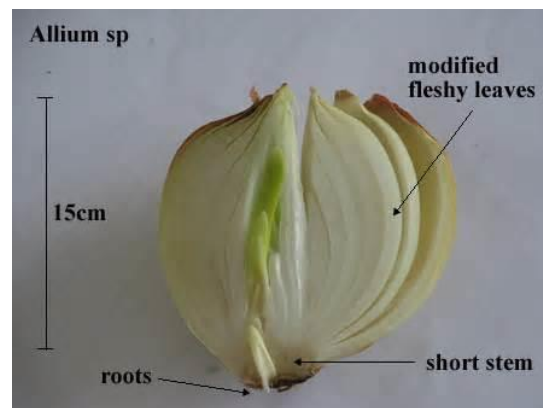
- \_\_\_\_\_ —A tuber is an enlarged part of a stem that grows underground.
- A tuber can develop into a separate \_\_\_\_\_.
- Examples include potatoes and yams

- \_\_\_\_\_ —A tendril is a threadlike leafless growth on a stem that attaches itself around other stems and objects.
- Tendrils typically grow in a \_\_\_\_\_, attaching itself, it \_\_\_\_\_.
- \_\_\_\_\_ often have tendrils.
- Examples are sweet peas and cucumbers.



- \_\_\_\_\_ —A stolon is an \_\_\_\_\_ that grows horizontally and propagates new plants.
- \_\_\_\_\_ are well known as examples of plants that multiply using stolons.

- \_\_\_\_\_ —A bulb is an \_\_\_\_\_ organ consisting of flattened, fleshy stem-like leaves with roots on the lower side.
- Examples of bulbs are onions and daffodils.



- \_\_\_\_\_—A corm is a food storage structure at the end of a stem that grows underground.
- It is an enlarged or swollen \_\_\_\_\_.
- Examples include gladiolus and crocus.



- \_\_\_\_\_—A cladophyll is a leaf like branch that resembles a leaf.
- It is also called a \_\_\_\_\_.
- A cladophyll functions much like a leaf.



- The \_\_\_\_\_ is the reproductive part of flowering plants.
- Once fertilized, they produce \_\_\_\_\_.
- **Stamen** –the \_\_\_\_\_ of the flower.
- **Anther** is the part of a stamen that \_\_\_\_\_.
- \_\_\_\_\_ is the slender part of a stamen that supports the anther.
- **Pollen** – \_\_\_\_\_.
- **Pistil** – the \_\_\_\_\_ of a flower and where the seed(s) and fruit/vegetable is produced
- The mature \_\_\_\_\_ is a \_\_\_\_\_, and the mature \_\_\_\_\_ is a \_\_\_\_\_.



- **Stigma** – a \_\_\_\_\_ where pollen \_\_\_\_\_.
- **Style** is a \_\_\_\_\_ that connects the stigma and the ovary.
- **Petals** - are located just inside the sepals and are usually brightly colored to \_\_\_\_\_.
- **Sepals** are \_\_\_\_\_ that form the outer whorl of a flower and are the \_\_\_\_\_ of a flower to form. Sepals function to protect the developing flower and keep it from \_\_\_\_\_.

