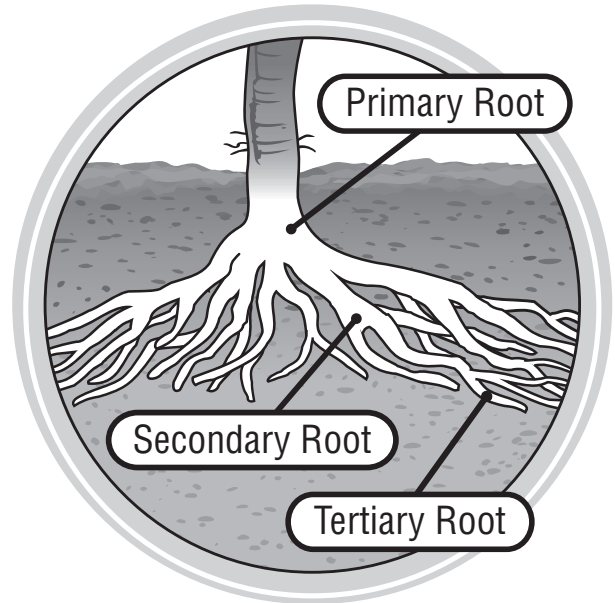


Plant Parts and Functions

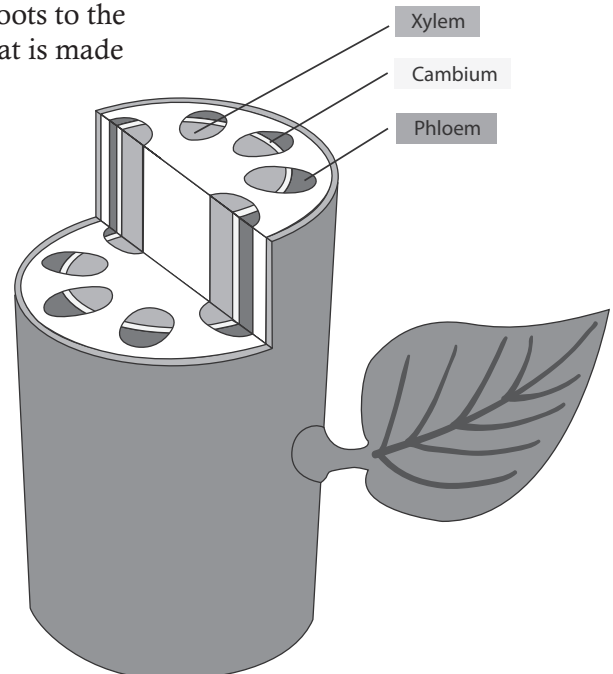
Roots anchor plants in soil, store food, and absorb nutrients and water. Different types of plants have different types of roots. If you pull up a tuft of grass you will see that it has fibrous roots. If you pull up a carrot you will see that it has a tap root. Root hairs are tiny roots that grow off the root tips and increase the area for water and nutrient absorption



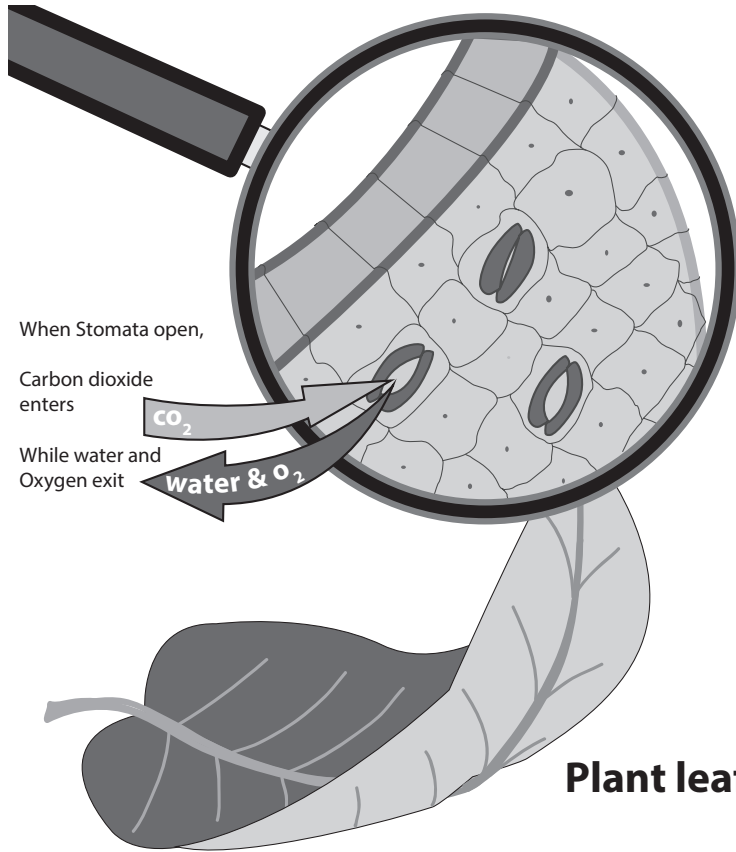
Stems support the upper part of the plant. The stem houses the xylem cells that transport water and dissolved nutrients from the roots to the rest of the plant and the phloem cells that transport food that is made in the leaves to the rest of the plant.

Leaves capture sunlight energy so the plant can make its own food through photosynthesis. **Chloroplasts** are the specific organelles within leaf cells that are responsible for photosynthesis. Green chlorophyll pigment captures sunlight energy for the chemical reactions that take place during photosynthesis to turn water and carbon dioxide into plant food and oxygen.

Stomata are tiny pores that regulate the passage of oxygen, carbon dioxide, and water vapor into and out of the cells. Stomata are invisible to the naked eye and are usually found on the underside of leaves, surrounded by two jelly bean-shaped guard cells that regulate the opening and closing of the stomata.



Plant Parts and Functions *(continued)*

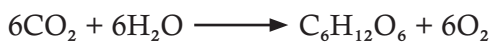


The illustration to the left shows a magnified view of stomata on the underside of a leaf. When the stomata are open, carbon dioxide can enter the leaf while water and oxygen can exit the leaf.

During hot, sunny days, stomata close in order to prevent water loss from the plant.

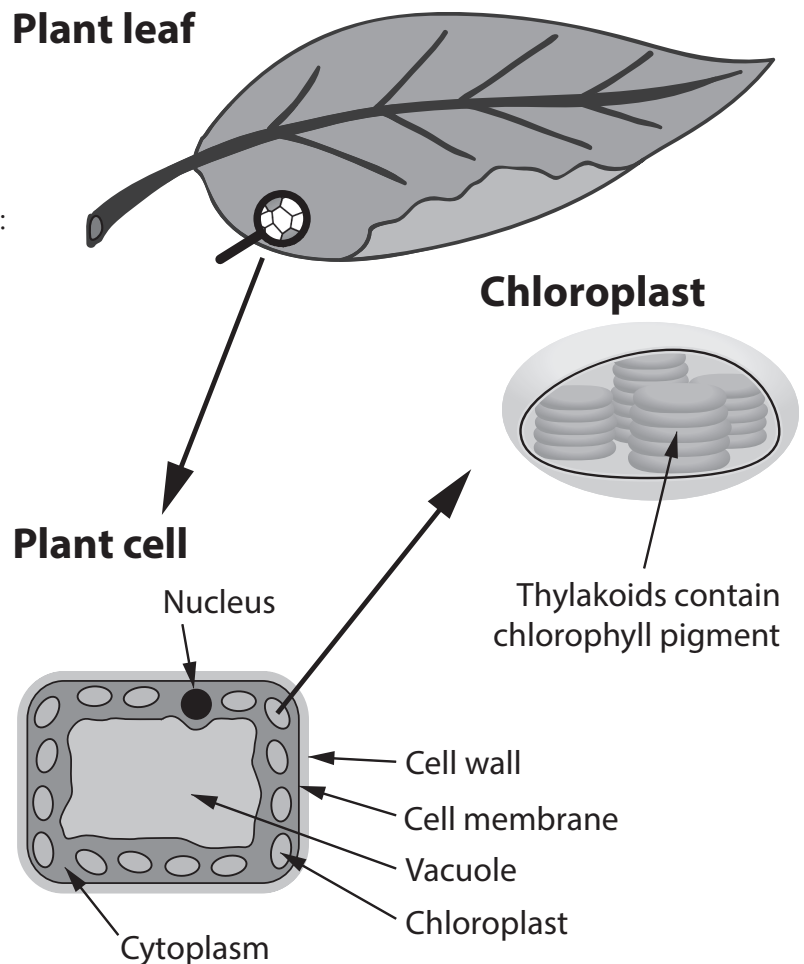
Plant leaf

The balanced equation for photosynthesis is:



The illustration to the right is a section of a plant leaf magnified to show an individual plant cell. Chloroplasts are the oval shaped organelles along the perimeter of the cell wall.

If you were to look inside a chloroplast, you would see stacks of disks called thylakoids which contain green chlorophyll pigment.



Chloroplast

Plant cell

Thylakoids contain chlorophyll pigment

Nucleus

Cell wall

Cell membrane

Vacuole

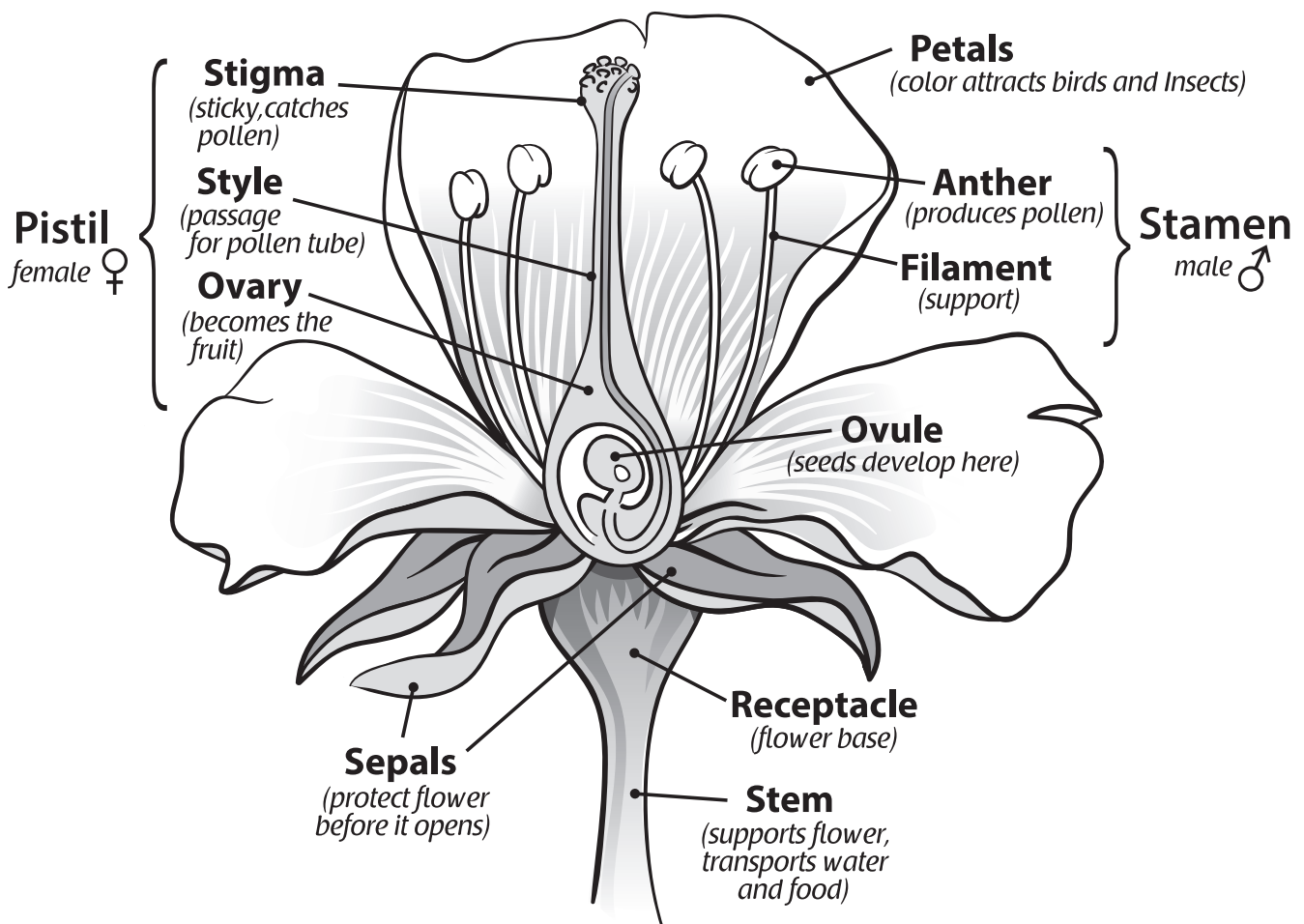
Chloroplast

Cyttoplasm

Plant Parts and Functions *(continued)*

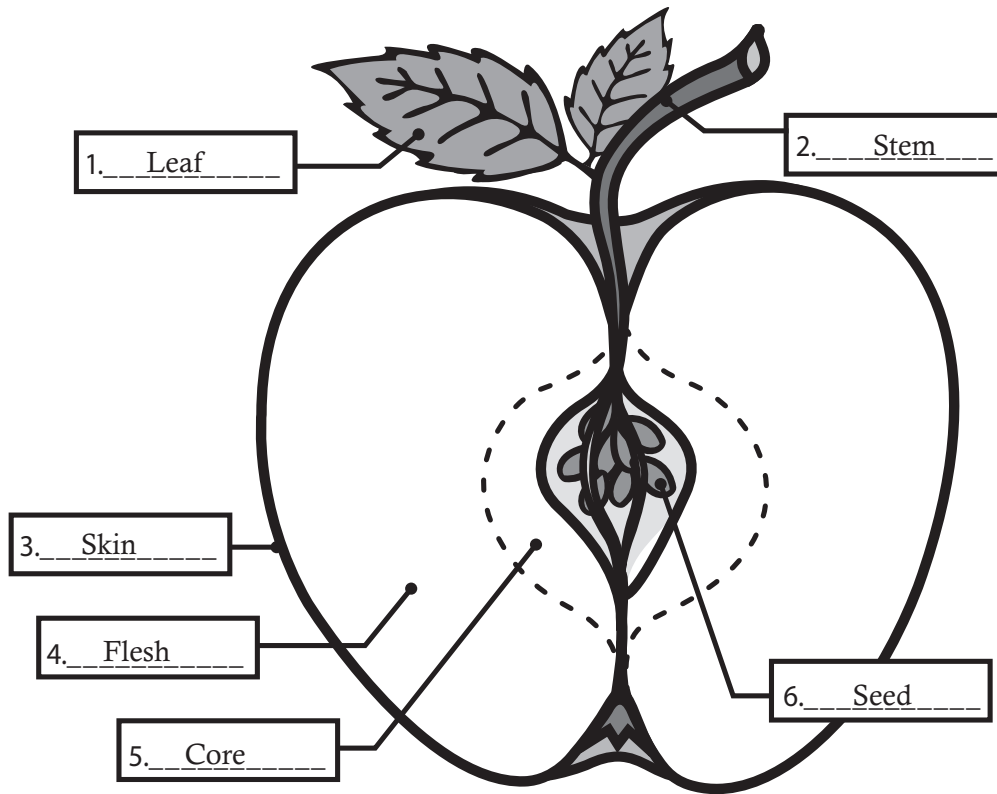
Flowers are the reproductive parts of plants. They often have showy petals and fragrances to attract pollinators such as birds, bees, and other insects. Most flowers have four main parts: petals, stamen (anther and filament), pistil (stigma, style, and ovary), and sepals. After flowers are pollinated and fertilized, they produce seeds in the ovary of the flower.

Parts of a flower



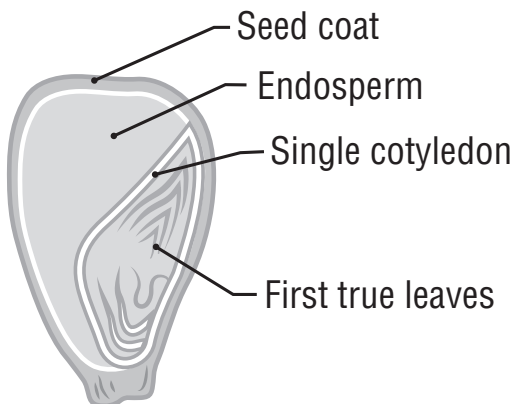
Plant Parts and Functions *(continued)*

Fruits are the fleshy substance that surrounds seeds. They protect the seeds and attract animals to eat them. This helps with seed dispersal.



Seeds contain plant material that can develop into another plant. This plant material is called an embryo. The endosperm provides food for the seed as it develops into a seedling plant. Seeds are covered with a protective seed coat and have one or two cotyledons. Cotyledons are part of the embryo and develop into the first leaves of the plant. Flowering plants are called angiosperms. The angiosperms are divided into two classes, the monocots, which have one cotyledon, or seed leaf, and the dicots, which have two cotyledons or seed leaves. Monocots have parallel leaf veins and fibrous roots, such as corn. Dicots have leaf veins that are in a netlike pattern and have taproots. Oak trees and dandelions are both dicots.

Monocotyledon (corn)



Dicotyledon (bean)

