

Introduction to the Flowering Plant Body

This laboratory is designed to introduce you to the structures of flowering plants. You will have the opportunity to observe many of the organs of flowering plants and relate these structures to how plants function. As you do this laboratory assignment, think about the ways plants deal with the problems of being alive, such as support, nutrition and internal transport.

The Flowering Plant Body

The body of a flowering plant consists of a **root system** and a **shoot system**. The root system, in most plants, is the below ground portion. The shoot system, above the ground, consists of stems and leaves. Flowers, which are the reproductive organs, are a modified shoot system.

Shoot systems branch through the formation of buds, which originate at nodes where leaves are attached to the stems. In many plants, buds develop protective scales and become dormant for a period of time. In others, buds develop directly into adult shoots, some of which produce flowers for reproduction. Roots, stems and leaves collectively comprise the vegetative parts of plants.

Root System

Note that the root system of the bean plant consists of one main root, called a **primary root**, or **tap root**, and many **lateral roots**, or branching roots. The primary root originates in the plant embryo. Lateral roots arise from within the tissues of the primary root.

Shoot System

The shoot system consists of the **stem** and its attached **leaves**, as well as any branching stems which may arise later at leaf nodes. The first leaves that you see above the surface of the soil are the **cotyledons**, or seed leaves. They are formed in the embryo, and are important in germination and seedling establishment. The foliage leaves are attached to the stem above the cotyledons. Foliage leaves have a leaf stalk, or **petiole**, and the expanded portion called the **blade**. There are many variations in leaf shape, dimension and vein patterns. Roots, stems and leaves are commonly called the vegetative parts of the plant. Flowers, which are modified shoots, are the reproductive parts of plants. Flowers give rise to fruits and seeds.

Resource Information for Lab

Read the information on page 48 (**Cells and Heredity Book**) – Plants capture energy from the Sun

Read the information on page 49 (**Cells and Heredity Book**) - Producing Sugars

Read the information on Page 50 (**Cells and Heredity Book**) Storing and Releasing Energy

Glucose picture example on page 88-90 **DLT**

Read page 110 in the **DLT book**- Flowers and Fruit

Read **DLT book**, Chapter 3 section 3 and complete the 3.3 Reading Study Guide.

Read **DLT book**, Chapter 3 section 4 and complete the 3.4 Reading Study Guide.

Checklist to keep you organized on this task

- Label the root and shoot system on the plant diagram
 - Label the root, the stem, the leaf, the node and internode (see Introduction of the Flowering Plants) on the diagram of a bean plant.
 - Draw into the diagram the sun with light energy shining on the leaves.
 - Draw a chloroplast organelle on a leaf
 - Show the raw materials enter the plant by drawing a stomata, where carbon dioxide enters the plant at so that it can be used by the plant in the process of photosynthesis
 - Show where water enters the plant roots and how it gets to the leaves so that it can be used by the plant in the photosynthesis process.
 - Illustrate photosynthesis on your diagram
 - by showing the chloroplast in the leaves
 - by showing where the sunlight energy is coming from
 - by showing how the photons are converted to a chemical energy, on the plant that all organisms can use.
 - Show where the extra glucose is stored (roots,) and where some of it is used to build new cells called a flower.
 - Draw a flower on the diagram and explain the function of the flower to the organism called plant.
 - Label the parts to a flower DLT page 110
- Answer questions 1-8

Name _____

This completed diagram and questions 1-8 when answered are to handed in for a lab grade.



What functions do you expect each of the following organs to have for the plant?

1. Root _____

2. Stem _____

3. Leaf _____

4. Flower _____

5. Why are the leaves and stems of the plant green? How does the green pigment relate to an important plant function? _____

6. Why are the roots not green? _____

7. What are the necessary ingredients used by a plant that can be converted to chemical energy

- C
- H
- p

8. Name the part of the plant that benefits from the sugar being used as a building material and explain how it enables the plant to grow.