

# Horticulture Class

## Roland-Story – Week 3 – Parts of a Flower Lab

Name

### Introduction

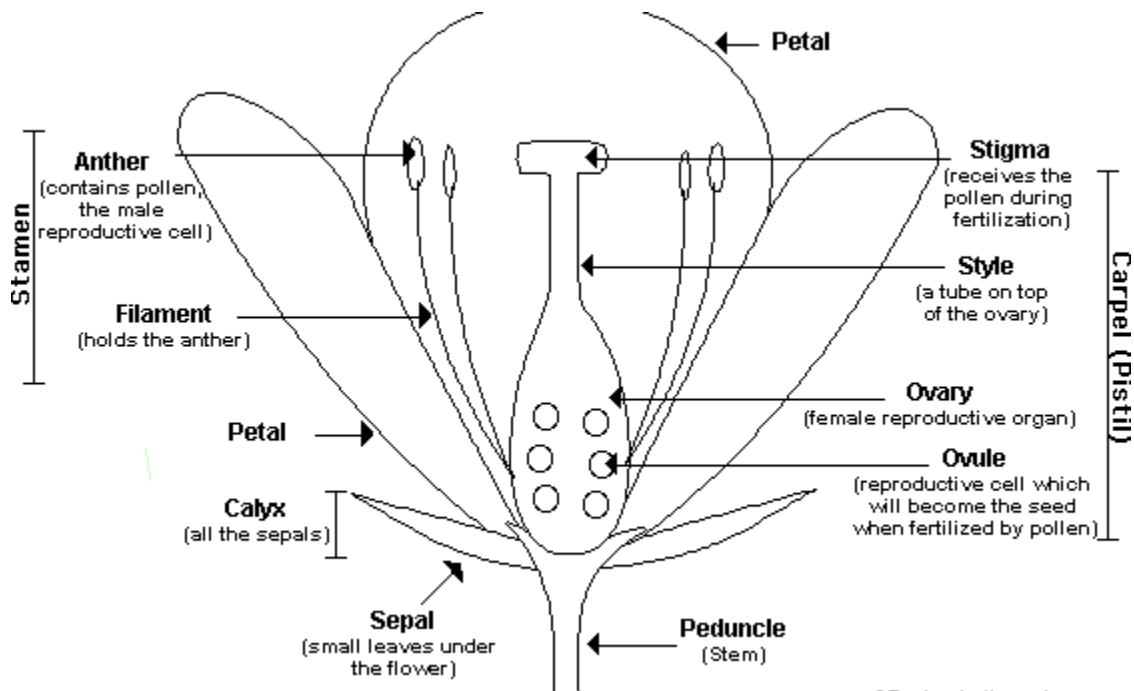


The angiosperms are seed-bearing plants that produce flowers. The seeds, which contain the plant embryo, are produced in the flower. Flower parts are arranged in circles called **whorls**. They are attached at the enlarged base of the flower, the receptacle.

Flower structures can be divided into two groups: the essential organs and the accessory organs. The essential organs are the reproductive structures, which include the stamens (male) and the pistils (female). The accessory organs are the sepals and petals, which surround and protect the essential organs.

The stamen is the male reproductive organ and consists of two parts: the anther and the filament. The anther is the enlarged structure at the top of the stamen. Inside the anther are pollen sacs. When the pollen grains mature, the pollen sacs split open to release the dust-like pollen. The filament is a thin stalk that supports the anther.

The pistil is the female reproductive organ and consists of three parts: the stigma, style, and ovary. The stigma is an enlarged portion at the top of the pistil that becomes moist and sticky when mature. The style is the middle portion of the pistil. The ovary is the enlarged structure at the bottom of the pistil. The ovary contains one or more hollow compartments called locules. Each



Pollination occurs when pollen grains land on the sticky surface of the stigma and are trapped there. Fertilization occurs when the sperm nuclei join the egg nuclei.

### Lab Objective:

1. To study the structure of a typical flower.
2. To study the male and female reproductive organs needed for sexual reproduction in flowering plants.

### Procedure

1. Obtain a single flower and observe its parts carefully. Flower parts are arranged in a circular pattern. Each circle is called a **whorl**. The whorls are attached at the enlarged receptacle located at the base of the flower.  
Please read this overview before you begin your flower dissection:  
As you examine your flower, you will be carefully removing parts beginning with the outer whorl and working your way in towards the pistil. You will arrange each whorl in a circle on cardboard, beginning with the sepals as the largest outermost circle.
2. The sepals form the outermost whorl of the flower. The sepals are leaf-like structures that are usually green in color. Sometimes, the sepals are the same color as the petals, or appear to be another set of petals of a different color. The function of the sepals is to protect the inner part of the flower before it blossoms. Gently remove the sepals, and lay them into position onto the cardboard.

- a) How many sepals does your flower have?
  - b) Describe the appearance of the sepals (color, markings, etc.).
3. The petals are found directly under the sepals. The color and odor of the petals help to attract birds and insects to the flower for pollination. Gently remove the petals, position onto the cardboard, and label them.
- a) How many petals does your flower have?
  - b) Describe the appearance of the petals (color, markings, etc.).
4. The stalk-like structures inside the petals are the stamen. Depending on the species, the stamens may be attached to the receptacle, to the petals, or to the pistil. The enlarged portion at the top of the stamen is the anther. Inside the anther are pollen sacs, which produce pollen grains. When the pollen grains mature, the pollen sacs split open, releasing the dust like pollen grains. The filament is the thin structure that supports the anther. Gently remove the stamens, lay them onto the cardboard.
- a) How many stamens does your flower have?
  - b) To which structure(s) were the filaments attached?
  - c) Have the pollen sacs opened? How can you tell?
  - d) If pollen grains are visible, describe their appearance.
5. The central structure of the flower is the female reproductive organ, the pistil. The top of the pistil is the stigma. The style is the middle portion of the pistil. It supports the stigma. Some flowers lack a style. The ovary is the enlarged structure at the bottom of the pistil. Carefully remove the pistil by cutting it from the stem just under the ovary.
- a) What color is the pistil?
  - b) Describe the appearance of the stigma. Is the stigma mature? How can you tell?

c) Describe the appearance of the ovary.

**Discussion:** Please write the answers to the following questions using complete sentences.

What are some adaptations of flower petals to help attract pollinators?

How is the stigma of your flower adapted to capture and hold pollen?

Describe where pollination and fertilization occur.