

Understanding Flower Anatomy

ROSES are red. Violets are blue. Study flowers to get a clue. Okay, the poetry might be lacking, but flowers really are fascinating. We encounter them everywhere. Many of them are beautiful. Yet, you must look closely to appreciate their purpose fully.



Objective:



Examine flowers—their parts and types.

Key Terms:



anther

calyx

complete flower

corolla

fertilization

filament

imperfect flower

incomplete flower

ovary

perfect flower

petals

pistil

pistillate

pollen

pollination

sepals

stamen

staminate

stigma

style

Flowers

Flowers are the reproductive organs of angiosperms. They make it possible for a plant to reproduce sexually. Although we use flowers for many purposes, both aesthetic and practical, their real job is plant reproduction.

PARTS OF A FLOWER

Flowers are made of many intricate and important parts. The parts take on different appearances from one species to another.

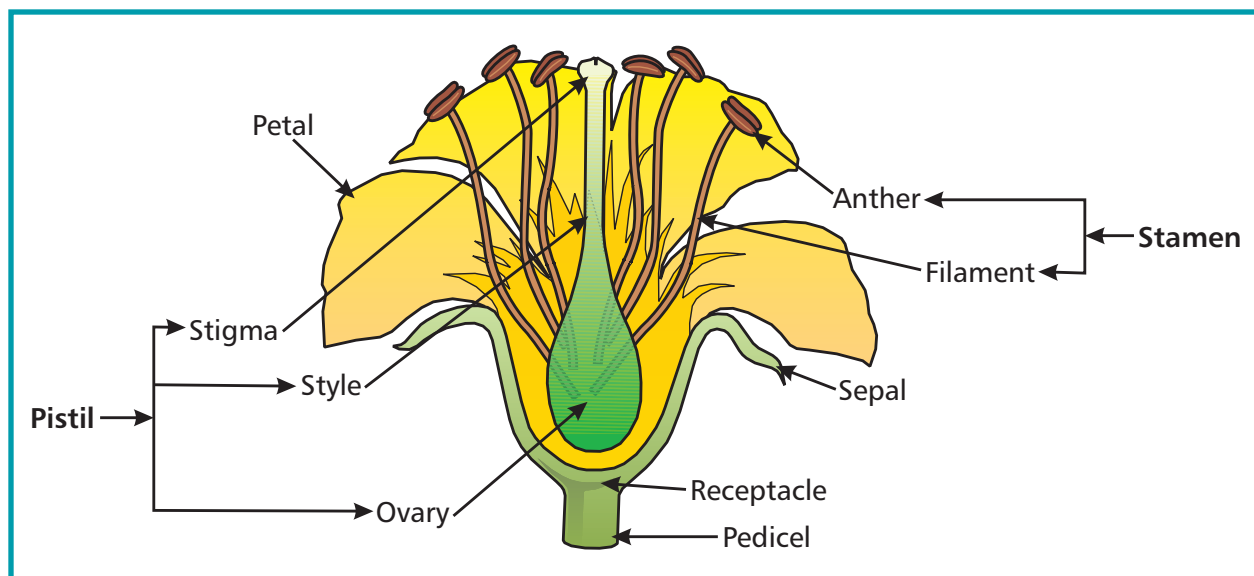


FIGURE 1. Major parts of a flower.

The male part of a flower is called the **stamen**. The stamen is made of the stalk-like **filament**, which holds up the sack-like **anther**. The anther produces **pollen**, the grain released by flowers that contains the sperm. Flowers that have only male parts are called **staminate**.

The female part of a flower is called the **pistil**. The pistil has a sticky tissue at its end called the **stigma** that is receptive to pollen. Below the stigma are a rod-shaped middle part called the **style** and a swollen base containing eggs called the **ovary**. Flowers that have only female parts are called **pistillate**.

A flower usually also has parts that are neither male nor female. These are the **petals**, often colorful leaflike structures that attract animals and insects. When all the petals are fused together, the structure is called a **corolla**. Beneath the petals are more leaflike structures called **sepals**. Regularly green, the sepals support the petals and protect the flower before it opens. When all the sepals are fused together, the structure is referred to as a **calyx**.

POLLINATION AND FERTILIZATION

The first step in sexual reproduction is for the stamen to release its pollen. The pollen is carried by animal, wind, gravity, or other method to the stigma of another flower. **Pollination** occurs when the pollen from one flower lands on the stigma of a compatible flower.



FIGURE 2. Bees and other insects can carry pollen to the stigma of another flower.

Once the pollen reaches the stigma, it starts to grow a pollen tube down through the style. When it reaches the ovary, it deposits sperm. The sperm combines with the eggs in the ovary in a process called **fertilization**. After the eggs have been fertilized, the ovary and its surrounding tissue start to enlarge to become a fruit, and the fertilized eggs become seeds.

TYPES OF FLOWERS

Flowers come in many shapes, sizes, and colors. Some species have flowers with all the floral parts, whereas others lack certain parts.

A flower that has both male and female parts is called a **perfect flower**. Most flowers contain both male and female parts. A flower that is missing either male or female parts is called an **imperfect flower**.

If a flower has sepals, petals, pistils, and stamens, it is a **complete flower**. If a flower is missing one of those, it is an **incomplete flower**. Imperfect flowers are always incomplete. Incomplete flowers may or may not be imperfect.

A good way to tell the difference between monocot and dicot plants is to look closely at the flowers. Monocots have flowers with flower parts in multiples of three. Dicots have flowers with flower parts in multiples of four or five.

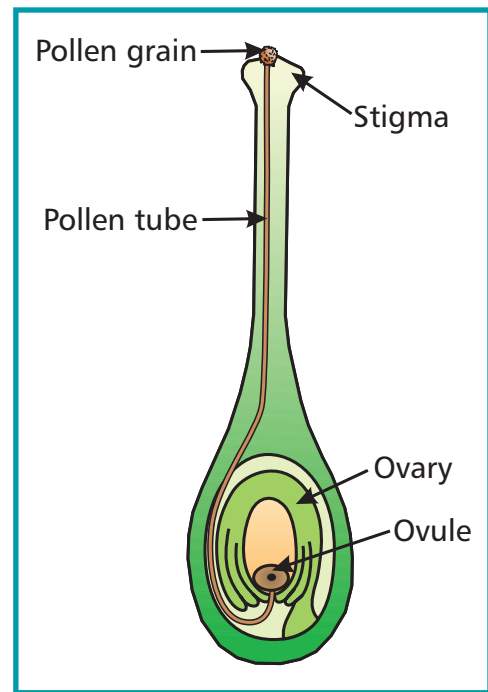


FIGURE 3. A pollen grain lands on the stigma and grows a pollen tube toward the ovule.



FIGURE 4. An apple tree has perfect, complete flowers.

Summary:



Flowers are the reproductive organs of angiosperms. The stamen consists of the filament and the anther. The anther produces pollen. The pistil is made up of the stigma, the style, and the ovary. Flowers may also have petals and sepals.

The stamen releases its pollen. When the pollen lands on the stigma of a compatible flower, pollination occurs. Fertilization takes place when the sperm from the pollen combines with the eggs in the ovary.

A flower that has both male and female parts is a perfect flower. A flower that is missing either male or female parts is an imperfect flower. If a flower has sepals, petals, pistils, and stamens, we call it a complete flower. If a flower is missing one of those, we call it an incomplete flower. Monocot flowers have floral parts in multiples of three. Dicot flowers have floral parts in multiples of four or five.

Checking Your Knowledge:



1. What are the major parts of a flower?
2. What defines pollination and fertilization?
3. What are perfect and imperfect flowers?
4. What are complete and incomplete flowers?
5. How do monocot and dicot flowers differ?

Expanding Your Knowledge:



Obtain flowers from different plants. Using forceps and a scalpel, carefully dissect the flowers. Identify and count the floral parts. Use a magnifying lens or microscope to get a closer look at the structures.

Web Links:



Flowers

<http://extension.oregonstate.edu/mg/botany/flowers.html#figure19>

<http://www.biologie.uni-hamburg.de/b-online/e02/02d.htm>

The Basics of Flowers

<http://www2.mcdaniel.edu/Biology/botf99/flowernew/flowerstructure.htm>