

Chapter 4: The Flower

4.1 Introduction to the Flower

Flowers are the reproductive organs of angiosperms (flowering plants). They serve as the site of sexual reproduction, facilitating the production of seeds and fruits. Flowers are not just beautiful and fragrant but also serve essential ecological roles by attracting pollinators and ensuring the continuation of plant species. This chapter explores the structure, function, and diversity of flowers in the plant kingdom.

4.2 Parts of a Flower

A typical flower consists of four main parts:

1. **Sepals:** Protect the flower bud before it blooms.
 2. **Petals:** Attract pollinators with their color, shape, and fragrance.
 3. **Stamens:** The male reproductive organs, consisting of the **anther** (which produces pollen) and the **filament** (the stalk that holds the anther).
 4. **Pistil:** The female reproductive organ, consisting of the **stigma** (which receives pollen), **style** (the tube that connects the stigma to the ovary), and **ovary** (which contains the ovules).
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4.3 Experiment: Flower Dissection

An experiment in flower dissection can help students understand the different parts of a flower. By cutting open a flower, one can examine the internal structure, such as the arrangement of the stamen and pistil, and observe how pollen travels to the ovule for fertilization.

Objective: To identify the parts of a flower and observe their role in the reproductive process.

4.4 Structure of a Bisexual Flower

A **bisexual flower** (also known as a **perfect flower**) contains both male and female reproductive organs: the stamens (male) and the pistils (female). This structure allows the flower

to self-pollinate or cross-pollinate with other flowers. The presence of both reproductive organs in a single flower is essential for the sexual reproduction of many plant species.

4.5 Types of Flowers

Flowers can be classified based on their reproductive organs:

- **Bisexual (Perfect) Flowers:** These flowers have both stamens and pistils, allowing them to carry out both male and female functions. Examples include lilies, roses, and sunflowers.
 - **Unisexual (Imperfect) Flowers:** These flowers have only one type of reproductive organ. There are two subtypes:
 - **Staminate (Male) Flowers:** These flowers contain only stamens and produce pollen. Examples include corn and holly.
 - **Pistillate (Female) Flowers:** These flowers contain only pistils and produce ovules. Examples include squash and cucumbers.
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4.6 Flower - A Fascinating Organ of Angiosperms

The flower is a vital organ of angiosperms (flowering plants), responsible for the production of seeds and fruit. It plays a crucial role in sexual reproduction by facilitating the fusion of male and female gametes (sperm and egg) through processes like pollination and fertilization. Flowers also exhibit a wide variety of shapes, sizes, and colors, which attract different pollinators like bees, birds, and wind.

Key Concepts: The role of flowers in reproduction, diversity of flower shapes and colors, and the ecological importance of flowers in ecosystems.

4.7 Sexuality in Flowers

Sexual reproduction in plants occurs through the fusion of male and female gametes. Flowers exhibit different types of sexual arrangements:

- **Perfect or Bisexual Flowers:** These contain both male (stamens) and female (pistils) reproductive organs in the same flower. This arrangement enables both self-pollination

and cross-pollination.

- **Imperfect or Unisexual Flowers:** These flowers have only one type of reproductive organ. They are further classified into:
 1. **Staminate Flowers:** Male flowers that contain only stamens.
 2. **Pistillate Flowers:** Female flowers that contain only pistils.
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4.8 Inflorescence and Placentation in Flowers

- **Inflorescence:** The arrangement of flowers on a stem or branch is known as inflorescence. It can take various forms, including:
 - **Racemes:** Flowers are borne on a central stem.
 - **Panicles:** A branched form of raceme.
 - **Corymbs:** Flowers grow in a flat or rounded shape with the lower flowers blooming first.
- **Placentation:** The arrangement of ovules in the ovary is called placentation. It can be classified as:
 - **Marginal:** Ovules are attached along the edge of the ovary (common in legumes).
 - **Axile:** Ovules are attached to the central axis of the ovary (common in lilies).
 - **Parietal:** Ovules are attached to the inner wall of the ovary (common in buttercups).
 - **Free-central:** Ovules are attached to a central column (seen in primroses).