



# **8-FLOWER-1**

## **(PERIANTH and ANDROECIUM)**

# 1. FLOWER

Flower is the reproductive organ of seed plants. A major diagnostic feature of angiosperms is the flower.

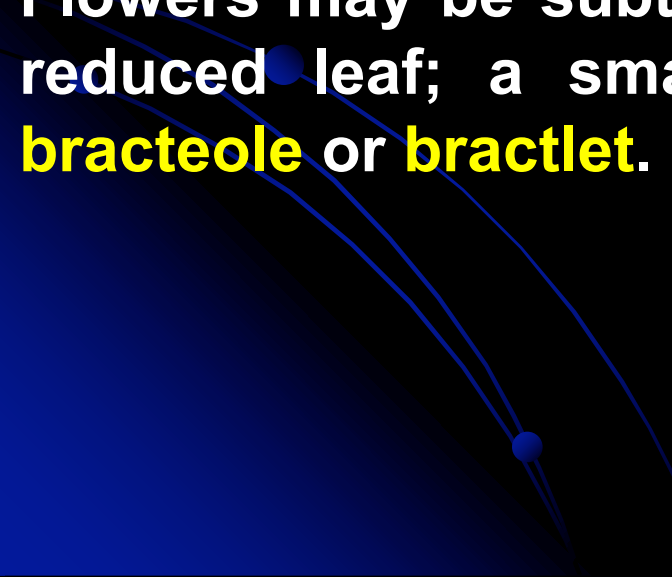
A flower is a modified reproductive shoot, basically a stem with an apical meristem that gives rise to leaf primordia. Unlike a typical vegetative shoot, however, the flower shoot is determinate, such that the apical meristem stops growing after the floral parts have formed.

Flower-bearing plants are called **anophytes** (flowering plants) or **spermatophytes** (seed plants).



In Angiosperms, each flower is placed on the tip of a short or long flower stalk (**pedicel**) on the trunk. Other organs of the flower develop on a **receptaculum** (flower plate), **thalamus** or **torus** that are more or less enlarged and elongated structures on a pedicel.

Flowers may be subtended by **a bract**, a modified, generally reduced leaf; a smaller or secondary bract is termed a **bracteole** or **bractlet**.



The essential parts of a flower can be considered in two parts: the vegetative part, consisting of petals and associated structures in the perianth, and the reproductive or sexual parts, consisting of androecium and gynoecium.

A stereotypical flower consists of **four kinds of structures** attached to the tip of a short stalk. Each of these kinds of parts is arranged in a whorl on the receptacle.

The four main whorls are as follows:

1. **Calyx**
2. **Corolla**
3. **Androecium**
4. **Gynoecium**

# PERIANTH

The perianth is the outermost, nonreproductive group of modified leaves of a flower.

In most flowers the perianth is differentiated into two groups.

1. CALYX

2. COROLLA

If the perianth is relatively undifferentiated, it is named “perigon” and the individual leaflike parts of perigon are named “tepals”.



**Corolla**



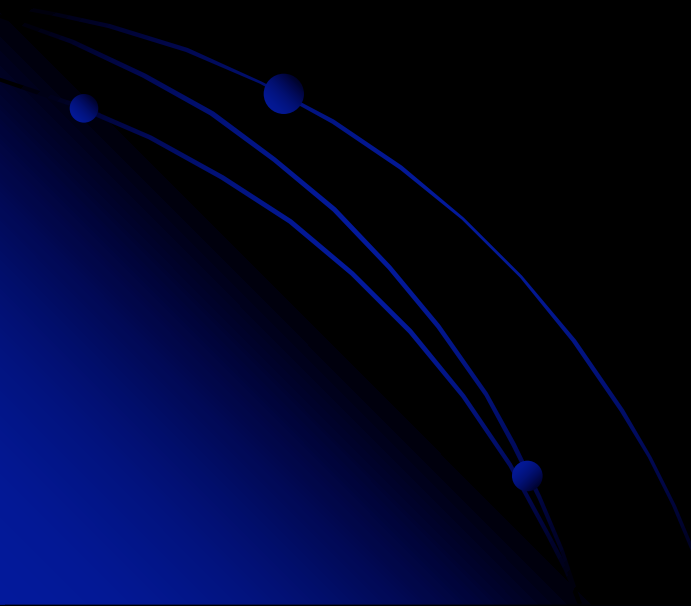
**Tepal**

# 1. CALYX

The **calyx** is the outermost series or whorl of modified leaves. Individual units of the calyx are “**sepals**”, which are typically green, leaflike, and function to protect the young flower.

If sepals are discrete, the term “**aposepalous**” may be used.

If sepals to be fused, the term “**synsepalous**” may be used.

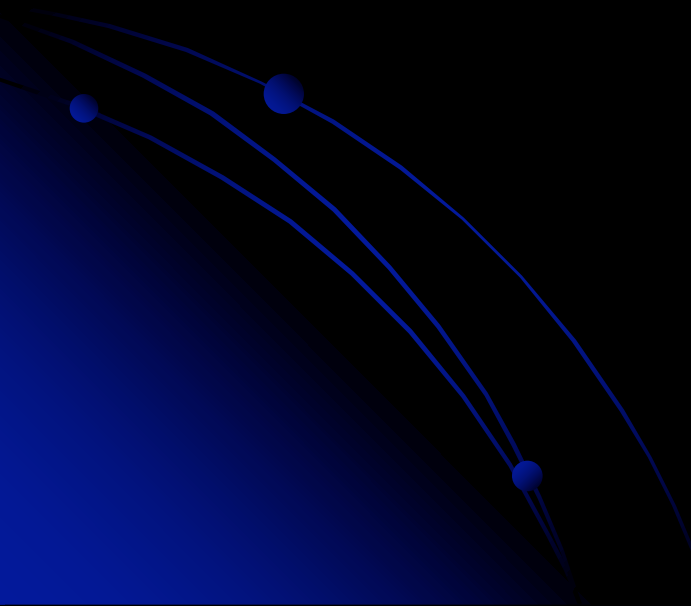




## 2. COROLLA

The **corolla** is the innermost series or whorl of modified leaves in the perianth. Individual units of the corolla are “**petals**”, which are typically colored (nongreen) and function as an attractant for pollination.

If petals are discrete, the term “**apopetalous**” may be used. If petals to be fused, the term “**synpetalous**” may be used.





“synpatalous”



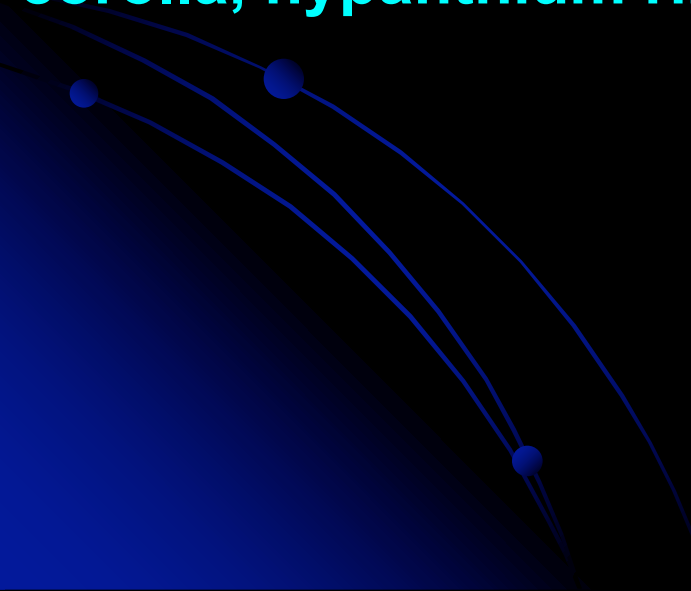
“apopatalous”

### 3. ANDROECIUM

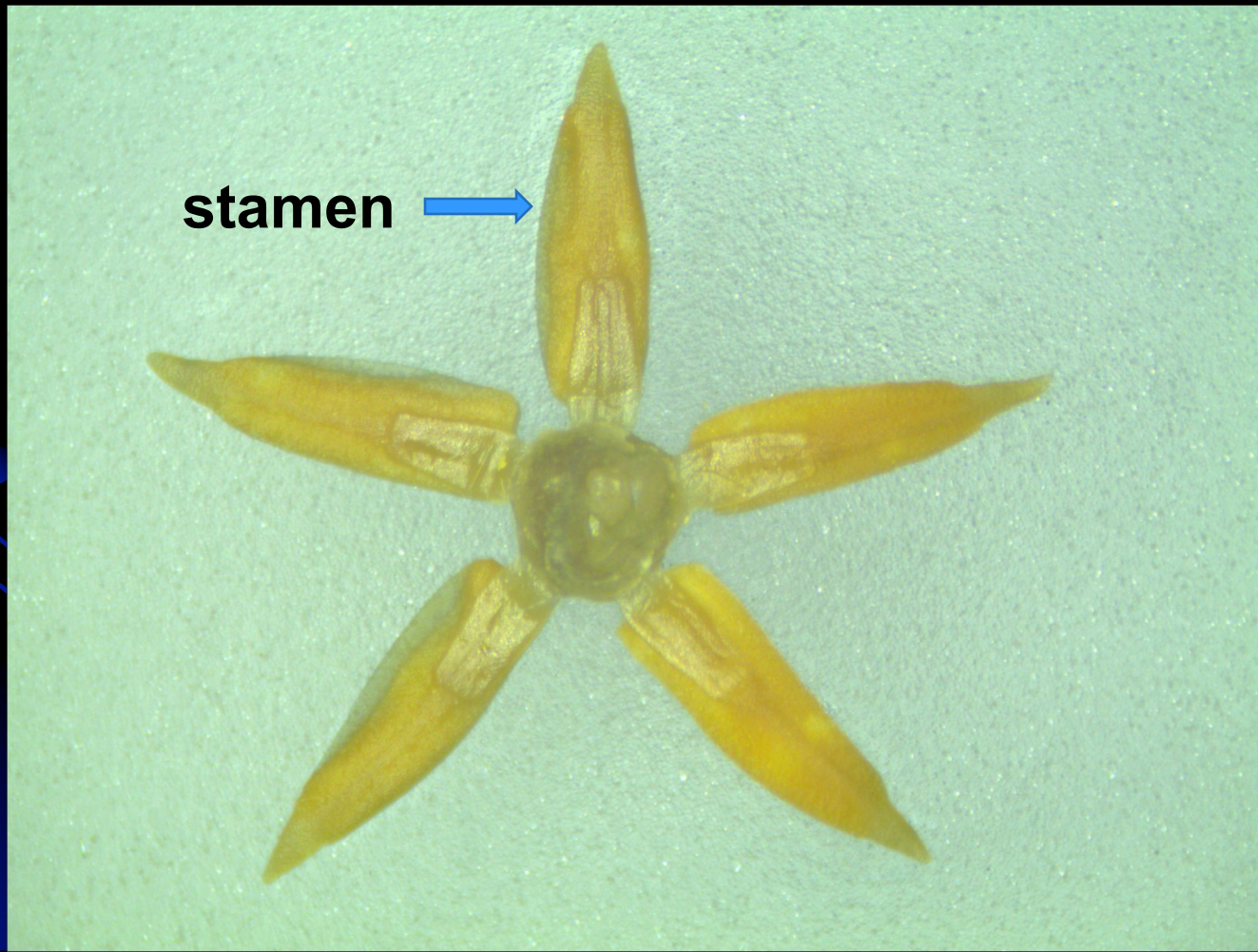
The androecium consists of all the floral male reproductive organs, the units of which are “**stamens**”.

The number of stamens varies depending on the plant type and is arranged in a **ring** or **spiral**.

Stamens initiate as primordia from the flower **apical meristem**, but at maturity are attached to the **receptacle**, **corolla**, **hypanthium rim**, or **staminal disk**.

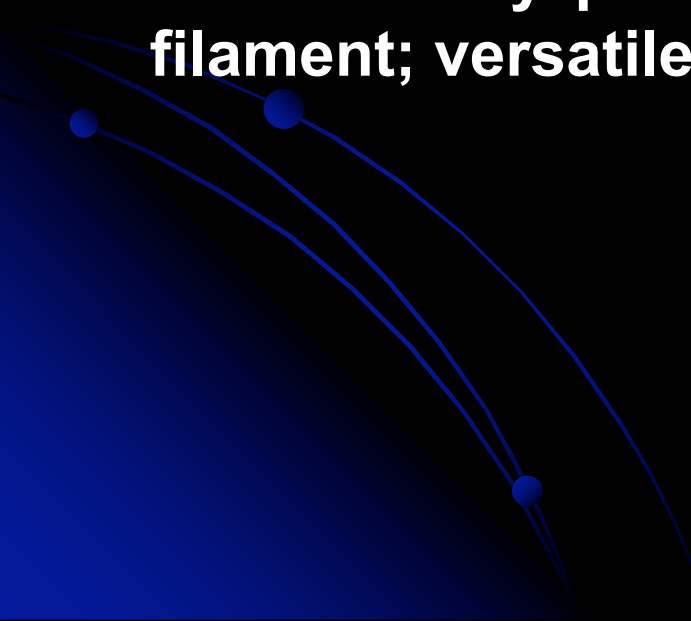


A stamen typically consists of a stalk called the "**filament**" and an "**anther**". Most commonly anthers are two-lobed (or **two theca**) and each theca consist of two pollen sac. The sterile tissue between the theca is called the "**connective**".



The anther can be attached to the filament's connective in three ways;

- 1. Basifixed:** Standard anther attachment type is basifixed, anther attached at its base to apex of the filament.
- 2. Dorsifixed:** Standard anther attachment types are basifixed, anther attached at its base to apex of the filament.
- 3. Versatile:** A versatile anther attachment is one in which the anther freely pivots at the point of attachment with the filament; versatile anthers may be dorsifixed, basifixed.



# ANTHER DEHISCENCE

Anther dehiscence refers to the opening of the anther in releasing pollen grains.

1. **Longitudinal**, the most common, and ancestral anther dehiscence type, dehiscing along a suture parallel to the long axis of the thecae.
2. **Poricidal**, dehiscing by a pore at one end of the thecae, such as the **Ericaceae**;
3. **Transverse**, dehiscing at right angles to the long axis of the theca;
4. **Valvular**, dehiscing through a pore covered by a flap of tissue, as in the **Lauraceae**.

# STAMEN FUSION

Stamen fusion refers to whether and how stamens are fused. The general terms distinct, connate, free, and adnate may be used.

If only the filaments of the stamens are united and the anthers are free, they are called "**adelf stamen**".

If only the anthers of the stamens are united and the filaments are separate, they are called "**singenesis stamen**".

## Adelf Stamen Types:

1. **Monadelphous Stamen:** monadelphous, with one group of stamens connate by their filaments. **For example**, members of ***Malvaceae*** family

**2. Diadelphous stamen:** Diadelphous, with two groups of stamens, each connate by filaments only.

**For example,** many member of **Fabaceae** family, which typically have nine stamens fused most of their length and one fused only at the base or not at all.

**3. Polyadelphous stamen:** Polyadelphous definition, (of stamens) united by the filaments into **three** or **more sets** or bundles

**For example,** *Ricinus communis* (caster oil) *Citrus limon* (Lemon)

**4. Syngenesious stamen:** Filaments are free and the anthers are united together into a tube.

**For example,** diagnostic of the **Asteraceae** family



**Thanks ...**

