

Flowers

➤ Definition:

- The flower is a compressed fertile shoot "sexual branch" with crowded modified leaves "floral leaves" and shortened internodes
 - Modified leaves: sepals, petals, stamens & carpels.
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➤ Function:

1. Flower is adapted for the production of the fruit and seed, i.e. for the propagation of the individual.
 2. The study of the flower is very important because it's the first step in the identification of plants.
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➤ Typical parts of flowers:

A typical flower is formed of 4 sets of floral leaves arranged on a shortened axis "Flower Stalk ", the expanded apex of which is called the "receptacle":

- Calyx: composed of sepals.
- Corolla: composed of petals.
- Androecium: composed of stamens.
- Gynoecium: composed of carpels.

طبعاً اخذنا الحاجات ديه وعرفنا ان الزهره بتتكون من calyx, corolla, androecium, و عرفنا كل واحد فيهم بيتكون من ايه واهميه الزهره انها تنتج البذور والفواكه و عرفنا انها هي اللي بتسهل عملية ال-identification على النبات

➤ The flower may be accompanied by:

- Bract: leafy structure from its axil a flower arises.
- Bracteole: scale like leaf found on the floral stalk.



Types of flower

According to presence or absence of both androecium and gynaecium or one of them:

1. Hermaphrodite: both androecium & gynaecium are present.
2. Unisexual: androecium OR gynaecium is present.
 - If the male organ "androecium" is present, the flower is described staminate if the female organ "gynaecium" is present, the flower is described pistillate.
3. Sterile(neither): both androecium and gynoecium are absent or not functional.

• لو الandroecium & gynoecium موجودين سوا في نفس الزهره تبقى.
Hermaphrodite....ولو الmale اللى موجود بس يبقى اسمها staminate ولو
الfemale بس يبقى اسمها. pistillate.

• معلومه كده نعرفها ان ال-ray florant في family asteraceae بتبقى
pistillate زى ال-German chamomile & pyrethrum ودول اللى اخدناهم في
العملى.

هنبدا مكونات الزهره عايزين معلومات معينه عنهم واحنا عارفينهم الحمد لله فاللى محتاج شرح
هكتبه علشان هو مش حشو ورق والسلام...

Calyx (sepals)

- Calyx is the outer whorl of the floral leaves. (imp)
- It's one of the non-essential organs of the flower
- Formed of 2 -5 sepals.
- Sepals are always green in color.
- Function: protection of the essential organs of the flower. (imp)

Corolla (petals)

- Corolla is the inner whorl of the non-essential floral leaves -5 or more petals arranged in a single, rarely two or more whorls.
- Petals have different colors.
- **Function:**
 1. Protection of the essential organs of the flower. (imp)
 2. Attraction of the pollen-carrying insects. (imp)

- **The color due to:** (الفهم فقط)

1. Anthocyanin: dissolved in cell sap giving different color to change in pH... color (red...violet.... Blue)
2. Carotene and xanthophyll: orang or red color.
3. Flavonoids: yellow color.

هنا بيقولى سبب اللون ايه وعندى 3 اسباب احفواول واحد ده اصلا مجموعه من الـ flavonoids بس مختلفه فى التركيب شويه وبتدينى لون على حسب الـ pH بتاع الـ cell sap...

Androecium "male sexual organ"

- It's one of the essential organs of the flower.
- It's formed of stamens arranged within or above the corolla.

Number of stamens:

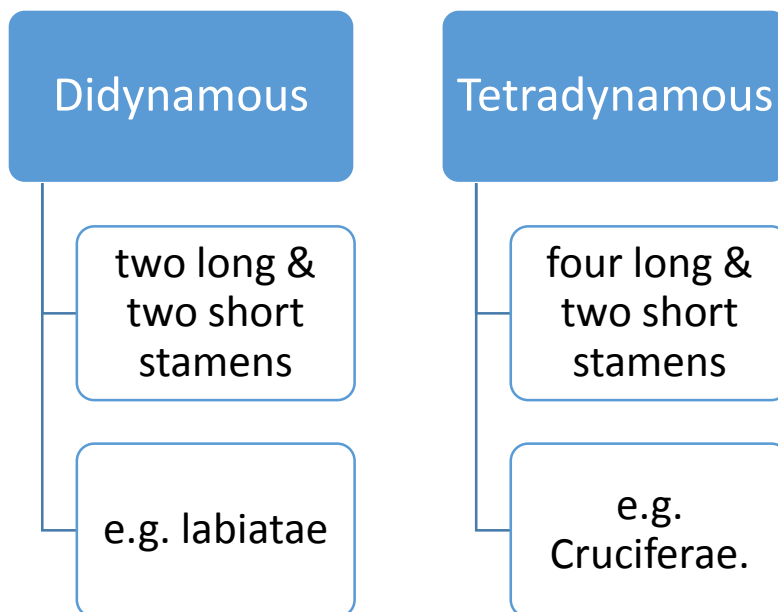
1. Definite: small in number.
2. Indefinite: very numerous and not easily counted.

Structure of stamens:

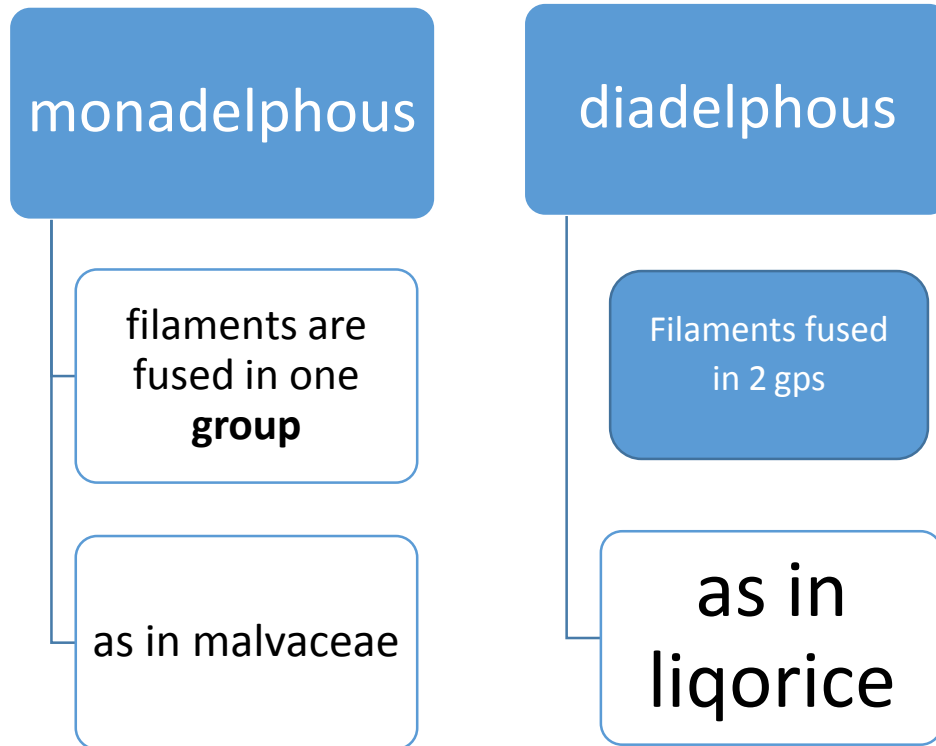
1. Filament: slender stalk which bears the anther.
2. Anther: it's a swollen, pollen-producing structure. It's divided into 2 anther lobes.
 - Each anther lobe includes 2 elongated pollen Sacs containing numerous pollen grains.
عندى الـ anther بيتكون من tow lobes فى بينهم connective tissue ووظيفته انه ينتج ال pollen grain .
 - **Staminode:** a sterile stamen with non-functioning anthers or has no anthers so it doesn't produce pollen grains.
لما الـ anther مينتجش pollen grains يبقى اسمه staminode .

Types of Androecium

1. According to the length of the filament:



1. 2. According to cohearing of stamens



b-cohearing of anthers>>>>>> syngenesious..... filaments are free but anthers fused [▲]as in compositae

Pollen grains

- ❖ The pollen grain has an outer membrane called exine and inner membrane called intine
- ❖ The exine shows one, two & commonly three germ pores from which the pollen tube protrudes
- ❖ The most characteristic elements found in powdered flower are pollen grains.

the flower في المعمل كل ما بتاخذوا زهره لازم تاخذوا شكل الـ pollen grains بتاعها علشان هي most characteristic element بنلاقية في الباودر يعنى هو حاجه مميزه جدا للـ flower

وباجى اوصف فيه ثلاث حاجات.. germ pores .. Shape.. Exine.. يعنى بوصف الطبقة الخارجيه وشكله والفتحات اللى فيه و عددهم كام ...

Gynoecium “female sexual organ”

- It's one of the essential organs of the flower.
- It's formed of carpels

Structure of carpels:

1. Stigma بتلرق عليه حبوب اللقاح:الميسم
2. Style بتبدا حبه اللقاح تعمل انبويه تلقيح تمتد خلال القلم لحد ما توصل للمبيض:القلم
3. Ovary المبيض: This may be formed of one, two or more carpels, separate or united together enclosing 1 or more ovules
ده بس كده المهم

☞ It is a flattened, convex or conical shorten axis on which the floral leaves are arranged.

☞ The receptacle is always short but occasionally it's elongated e.g. hypanthium. (imp)

- **Hypanthium:** it is modification of receptacle ; it is the elongation of receptacle below calyx and ovary as in clove

عارفين ان التخت هو بيثيل المحيطات الزهريه ...بيقولك بقى ان هو ممكن يحصله استطاله وبيكون تحت ال-calyx & ovary ديه حاله خاصه بسميها hypanthium هنعدها بعدين بس نعرفها كده دلوقتى

Inflorescences

- The inflorescences are aggregation on the plant.
 - The main axis in the inflorescences is called rachis or peduncle.
 - The stalk of the flower called pedicel
- اهم حاجه اعرفها ان الـ axis بتاعها اسمه rachis or peduncle وان الـ axis بتاع التفرعات اللى عليها اسمه pedicel .

▪ Type of the inflorescences according to the method of the branching:

1. Racemose
2. Cymose

▪ Capitulum or flower head inflorescences:

- Its inflorescences having very short swollen, flattened or conical axis on which is inserted sessile florets as in family compositae.
- The axis is wrongly spoken as receptacle surrounded by an involucers of bracts.

هى من الـ racemose يعنى هنلاقى الازهار الكبيره من ناحيه الخارج والصغيره موجوده المركز...وبتكون من العائله النجميه .. والازهار بتكون جالس (ملهاش عنق)المحور بتاع النوره مخروطى بتطلع فوقه الازهار وبيسمى receptacle وديه تسميه غلط علشان ديه بتسمى بس فى حاله الازهار المفرده مش النورات..والـ axis بتاعها محاط بمجموعه من الـ bracts ...

There are two types of florets in the same capitulum:

- 1.** Ray florets “ligulate florets” which have starp-like corolla
- 2.** Disc florets “tubular florets” which have tubular corolla, present in the center.

