

**NAVODAYA VIDYALAYA SAMITHI
HYDERABAD REGION**

**G. CHANNAIAH
(PGT BIOLOGY)**

**JAWAHAR NAVODAYA VIDYALAYA
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DIVISION ANGIOSPERMAE

- **Angiosperms means**

- A flowering, fruit-bearing plant or tree known for having ovules and seeds develop within an enclosed ovary.
- The **Angiosperms** are plants producing flowers.

- These are the flowering plants, where the ovules are enclosed in the ovary and hence seeded are enclosed in the fruit
- This is the **largest group** of plants occurring in a wide range of habitats.
- A flower is the shoot modified for reproduction

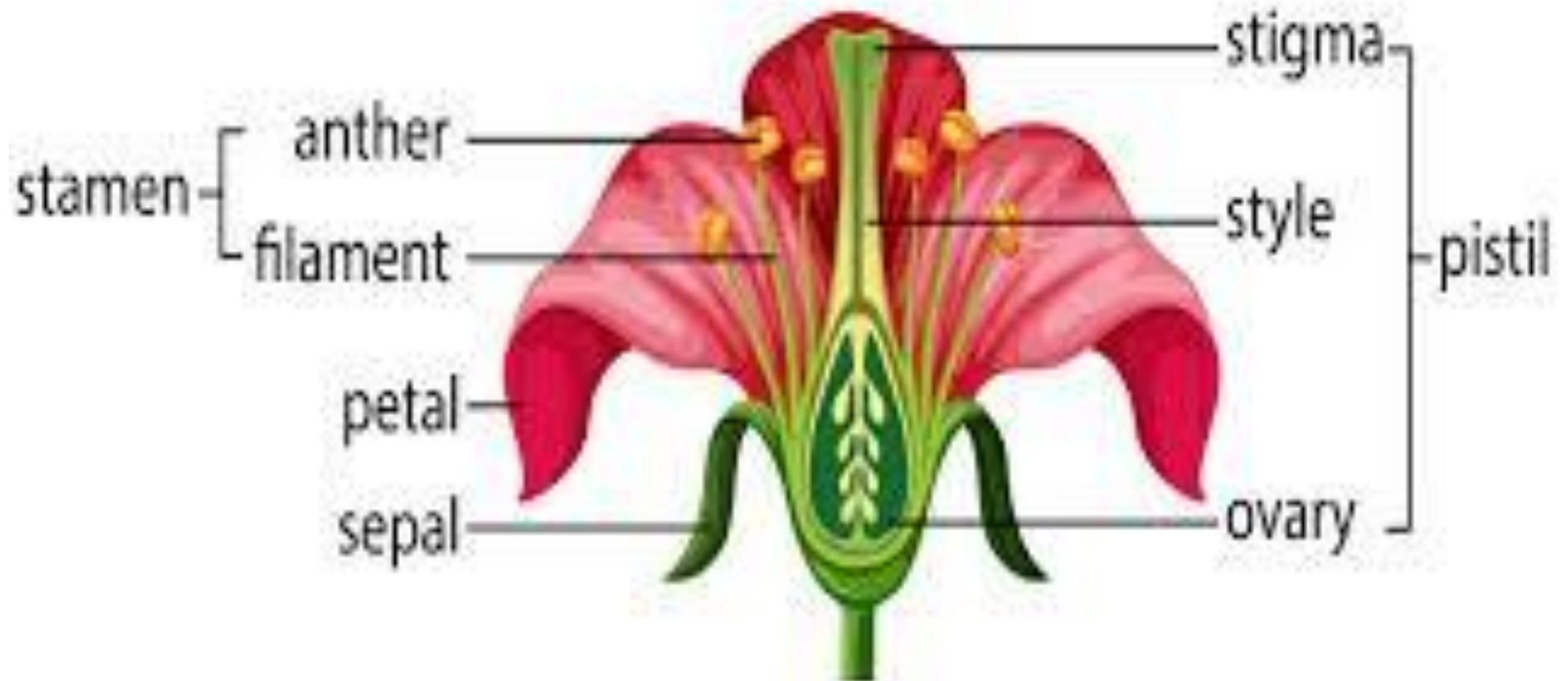
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- **Angiosperms** are the most **important** ultimate **source of food** for birds and mammals, including humans.
- These are **flowering plants** are the most economically **important** group of green plants, serving as a source of **pharmaceuticals, fibre products, timber, ornamentals, and other commercial products.**

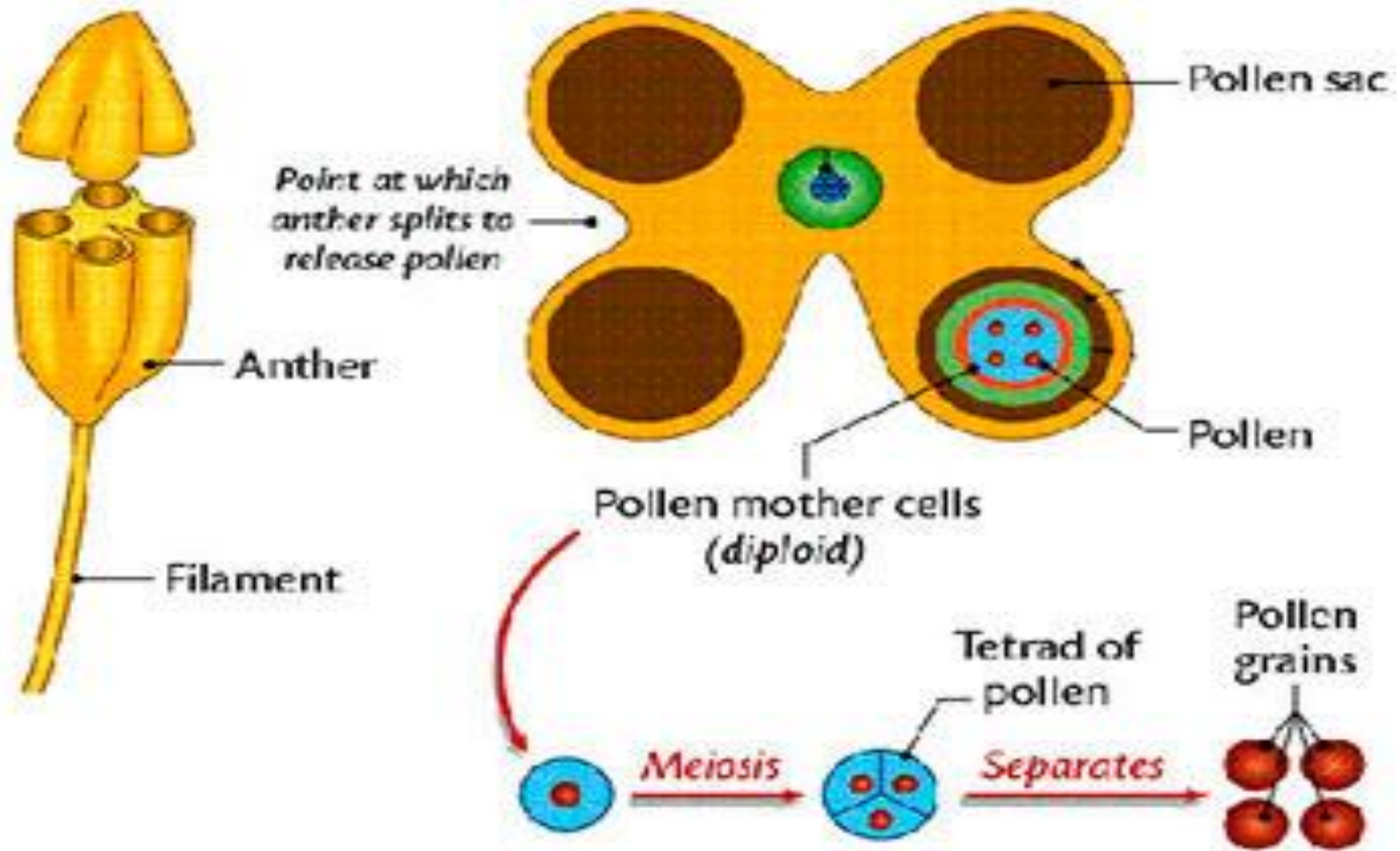
- The sporophyte which is the dominant plant in the life-cycle is differentiated into **roots, stem and leaves**.
- 2. The highest degree of perfection of the vascular system with true vessels in the **xylem** and companion cells in the **phloem**.

Flower

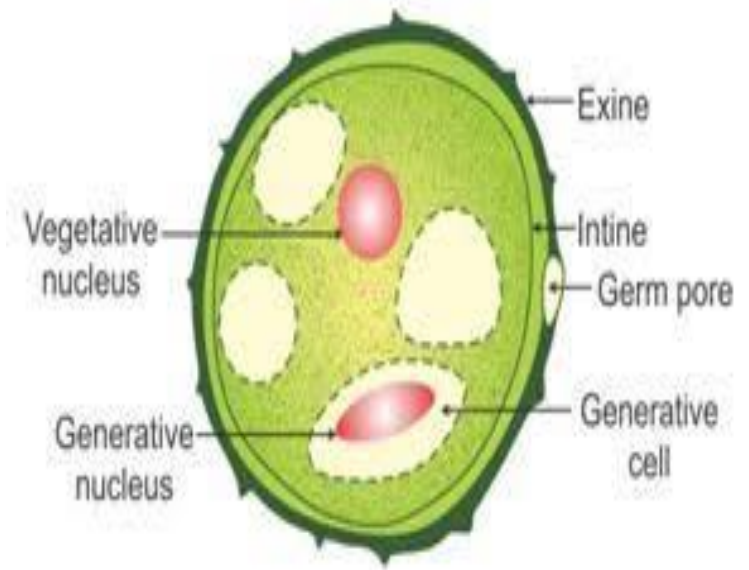
Common Flower Parts



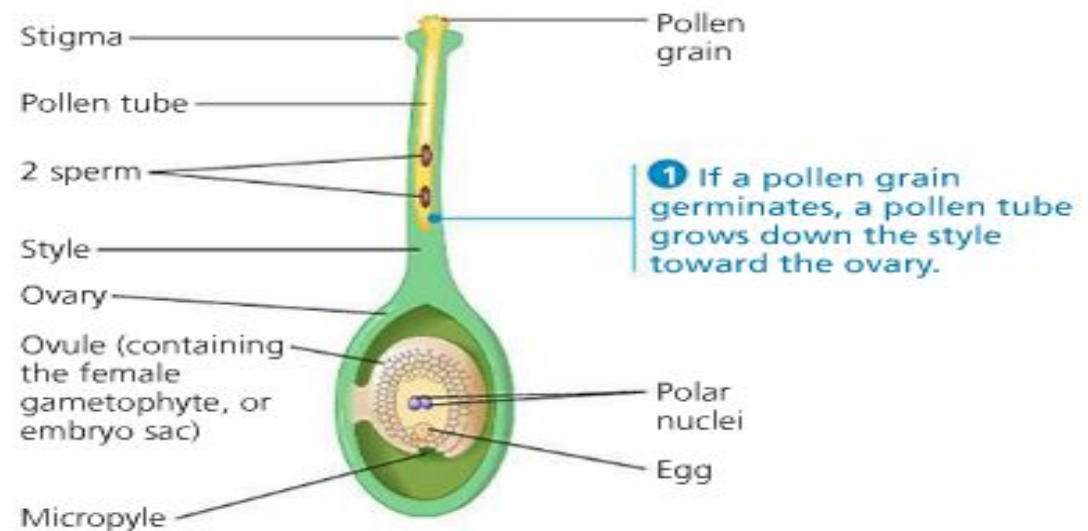
Anther and Pollen grain



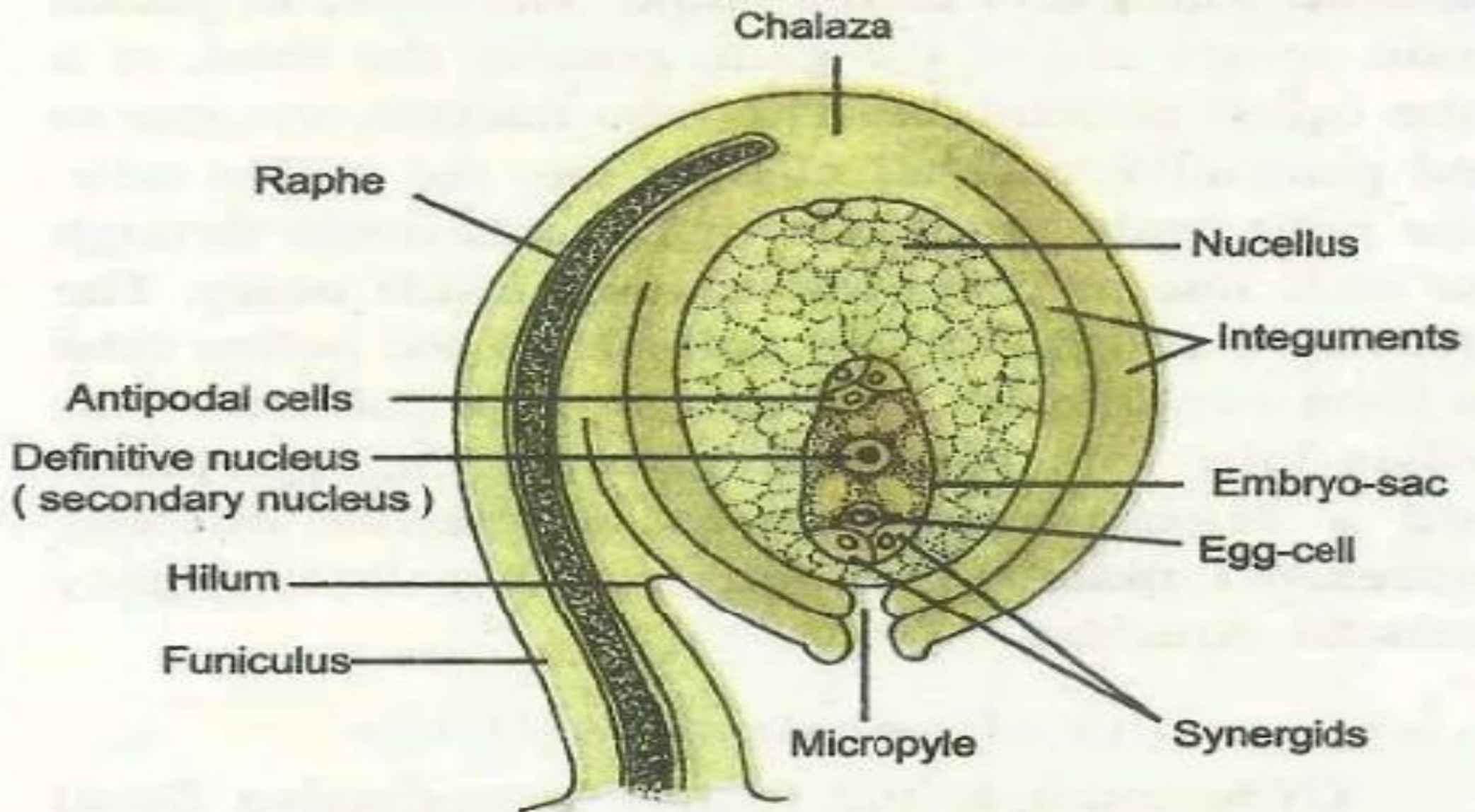
- The Male sex organs in a flower are the **stamens or microsporophyllus**
- Each stamen consists of a **filament and anther**
- The anther encloses microsporangia, where the **microspore mother cell** undergoes meiosis to form **microspores**, **microspores** develop into **pollen**



- The female reproductive organ of the is Pistil or Carpel
- The pistil is three parts
 - 1. an Ovary that encloses ovules
 - 2. a style, that expose the pollen grains
 - 3. a stigma to receive the pollen grains

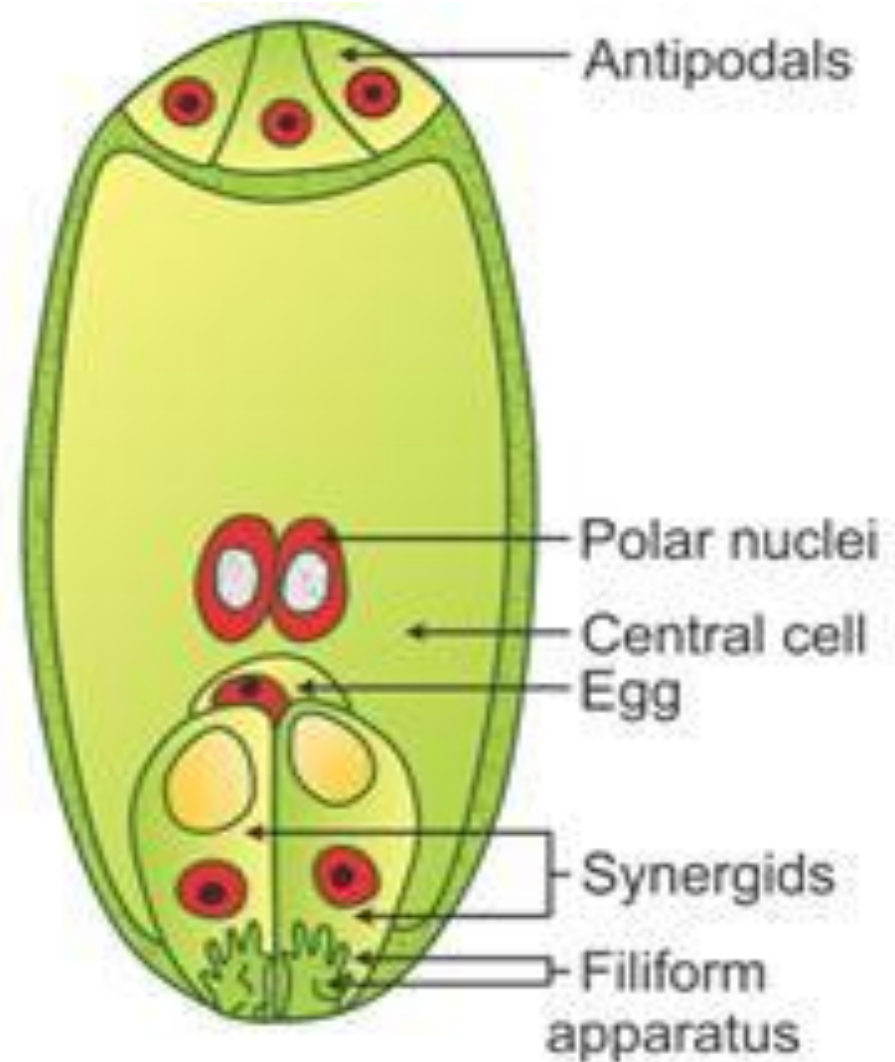


OVULE

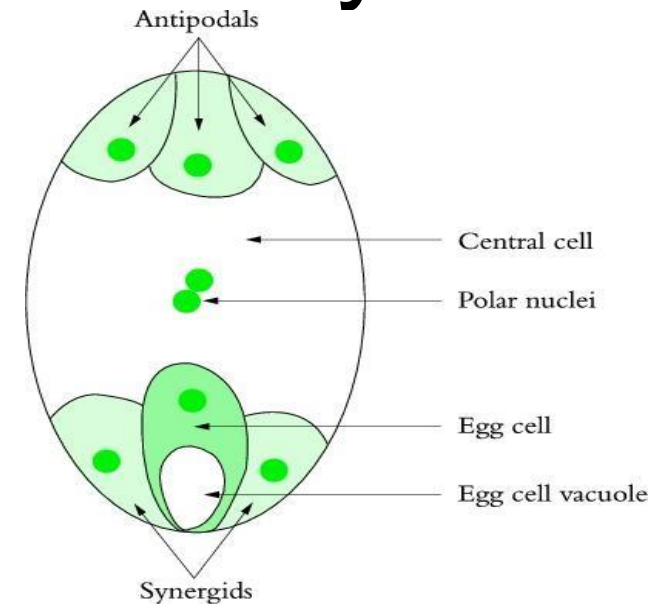


- Each Ovule (megasporangium) has a body called **nucellus**, covered over by **two integuments**, except at the micropyle.
- A megaspore mother cell is differentiated in the nucellus and it undergoes meiosis to form a linear **tetrad of megaspores**.

- Three of them degenerate and the functional megaspore enlarges and forms the **embryo sac**(female gametophyte).

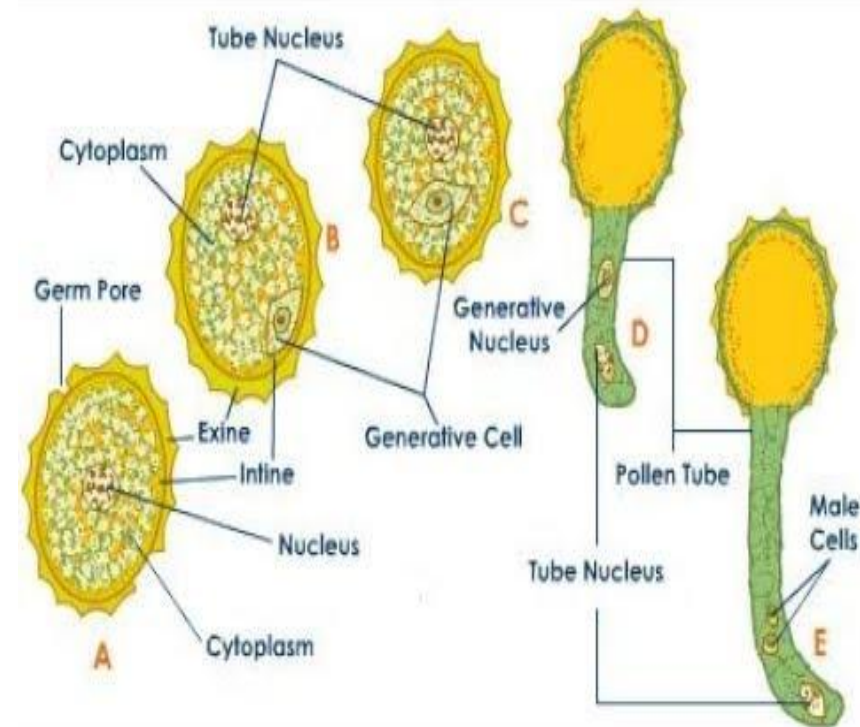
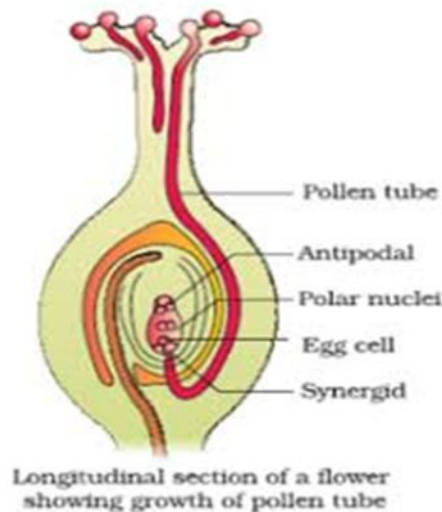


- It has three cells at the micropylar end forming the **egg apparatus**
- Three cells at the chalazal end forming the **antipodal cells**
- Two cells at the centre called **polar nuclei**, which fuse to form a diploid secondary nucleus.



- Pollen grains are brought to the surface of stigma of the pistil during **pollination**.
- Each pollen grain germinates forming a **pollen tube** that carries two male gametes to the embryo sac, growing through the tissue of stigma and style.

Germinating of pollen tube



- One of the male gametes fuses with the female gamete to form the **zygote**, this fusion is called **syngamy**.
- The second male gamete fuses with the secondary nucleus to form the **triploid primary endosperm nucleus**; this fusion is called **triple fusion**

- Since there are two fusions in the embryo sac during **fertilisation**, the phenomenon is called **double-fertilisation** and it is unique to angiosperms.
- After fertilisation, **the antipodal cells and synergids degenerate**, while the embryo and endosperm start their development.
- The ovule forms the seed and the ovary becomes the fruit.
- The seed on germination gives rise to the plant, **dominant phase in the life cycle**.

Angiosperms are Divided into two classes –

Dicotyledons (The seed have two cotyledons)

Monocotyledons (the seed have single cotyledon)

- **Smallest angiosperm** : Wolfia
- **Large tree** : Eucalyptus

Example for Dicotyledons

- 1. Mango
- 2. Neem
- 3. Rose

Mango plant



Rose Plant



Examples of Monocotyledons

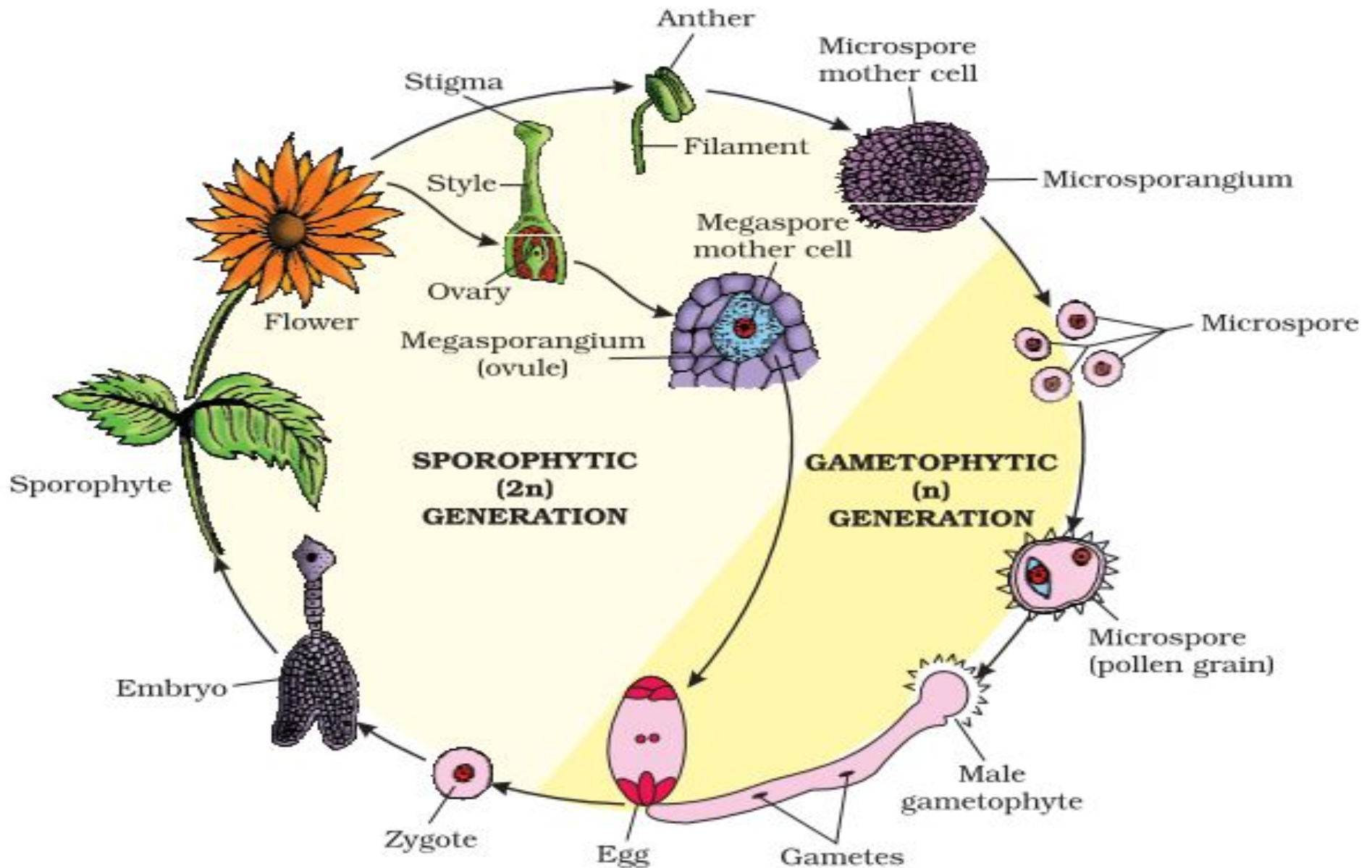
- 1. Maize 2. Sugarcane. 3. Grass 4. Raghi



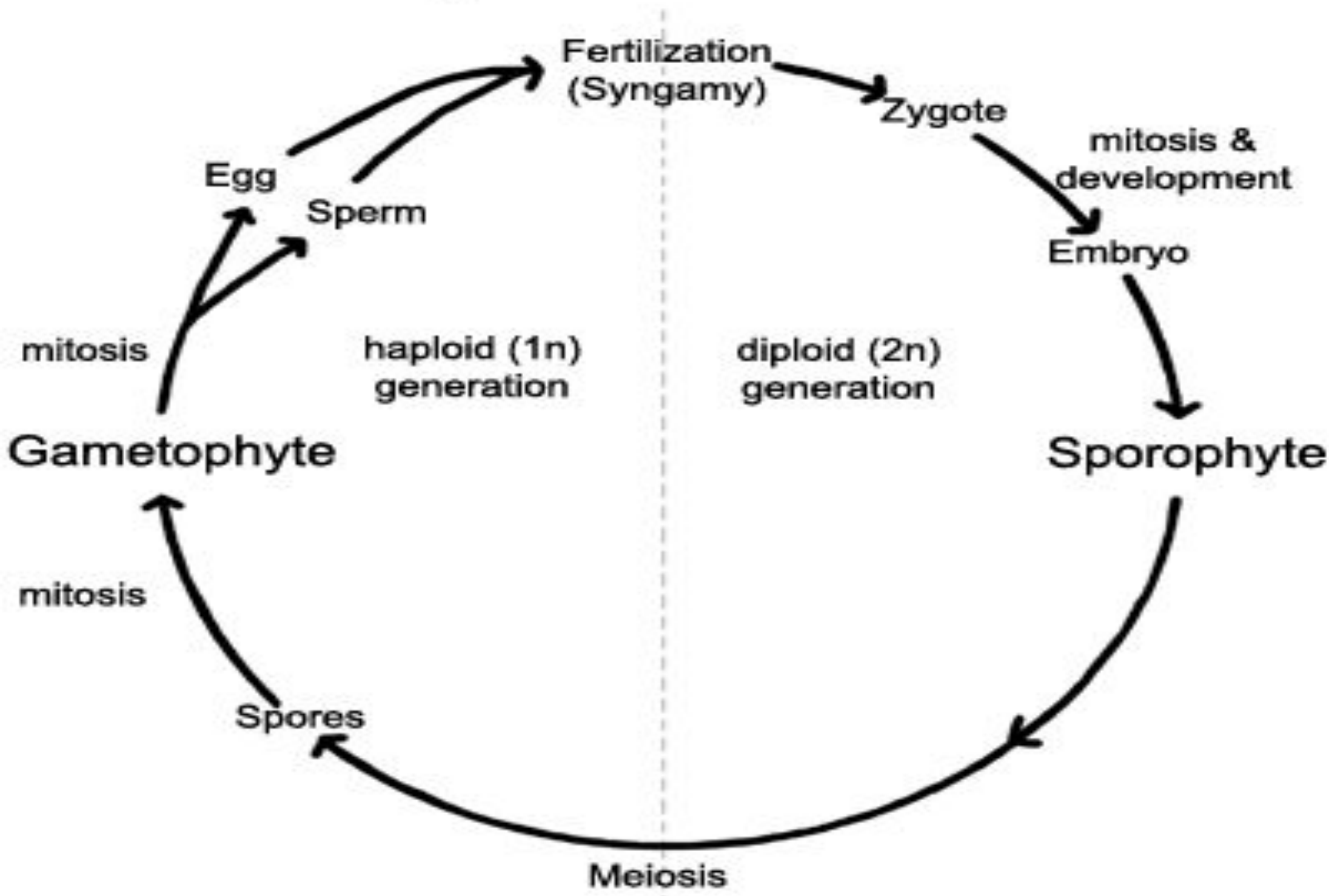
Zea mays L.



Life cycle of an angiosperm



Plant Life Cycle-Alternation of Generation



•The Life Cycle of an Angiosperm.

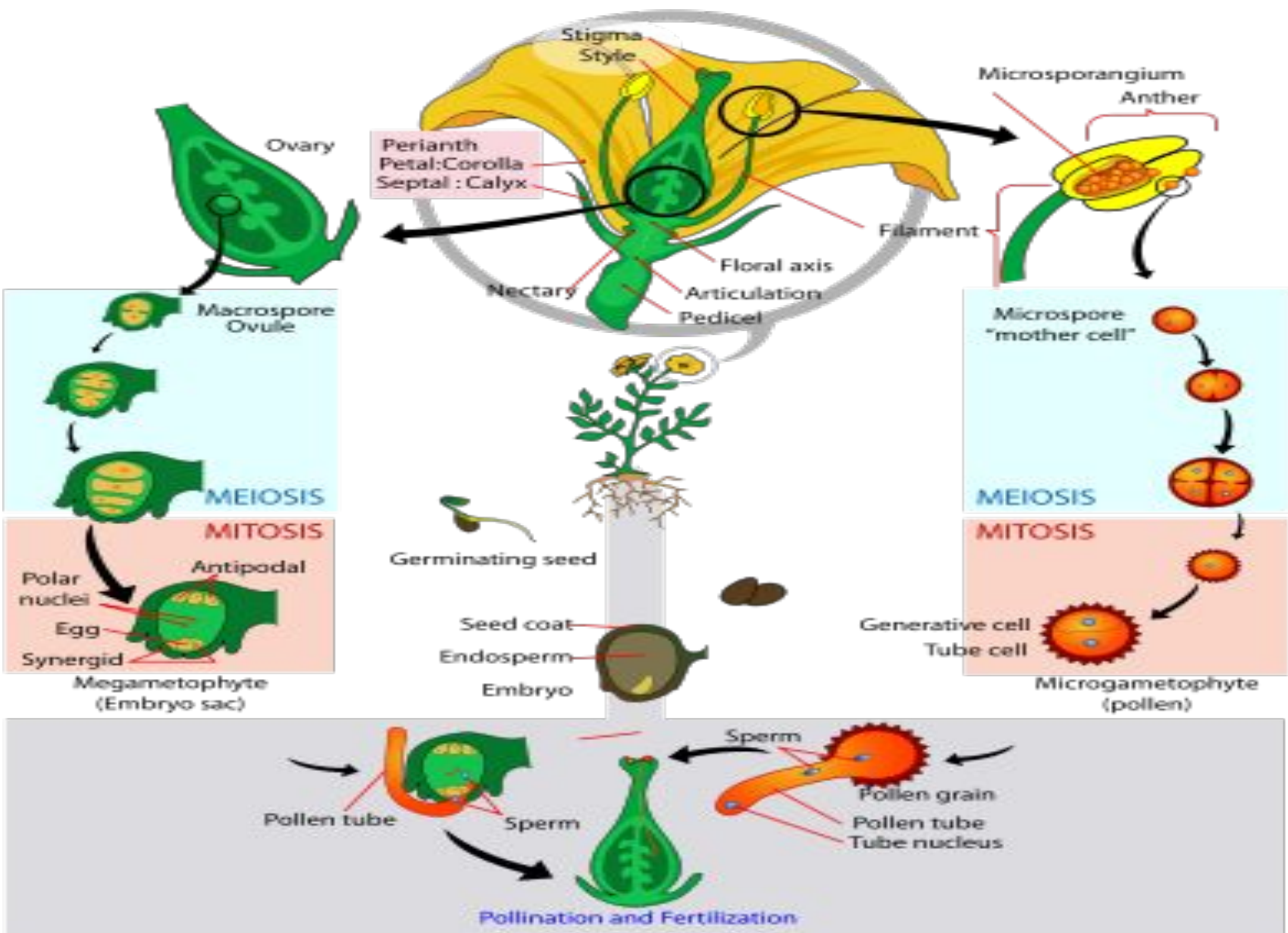
The adult, or sporophyte, phase is the main phase in an **angiosperm's life cycle**.

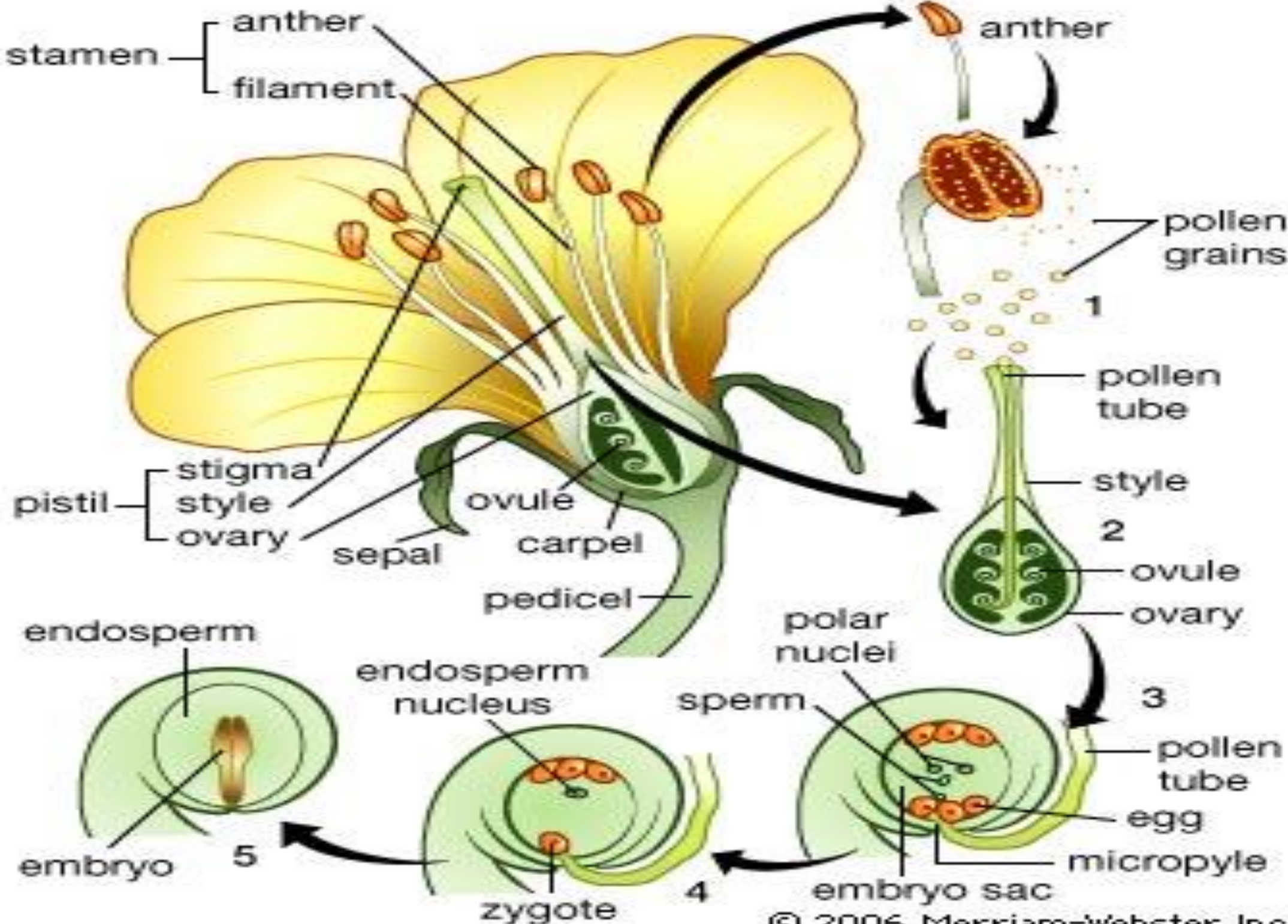
The **angiosperms** are **heterosporous**.

They produce microspores, which develop into **pollen grains** and **megaspores**, which form an ovule containing the female gametophytes.

Following steps (sequences) occur in sexual reproduction in a typical angiosperm plant.

- A. Development that lead to the formation of male gametes (sperms):
- B. Development that lead to the formation of female gametes (Egg):
- C. Fertilization.
- D. Development of embryo and formation.





The End
Thank You

