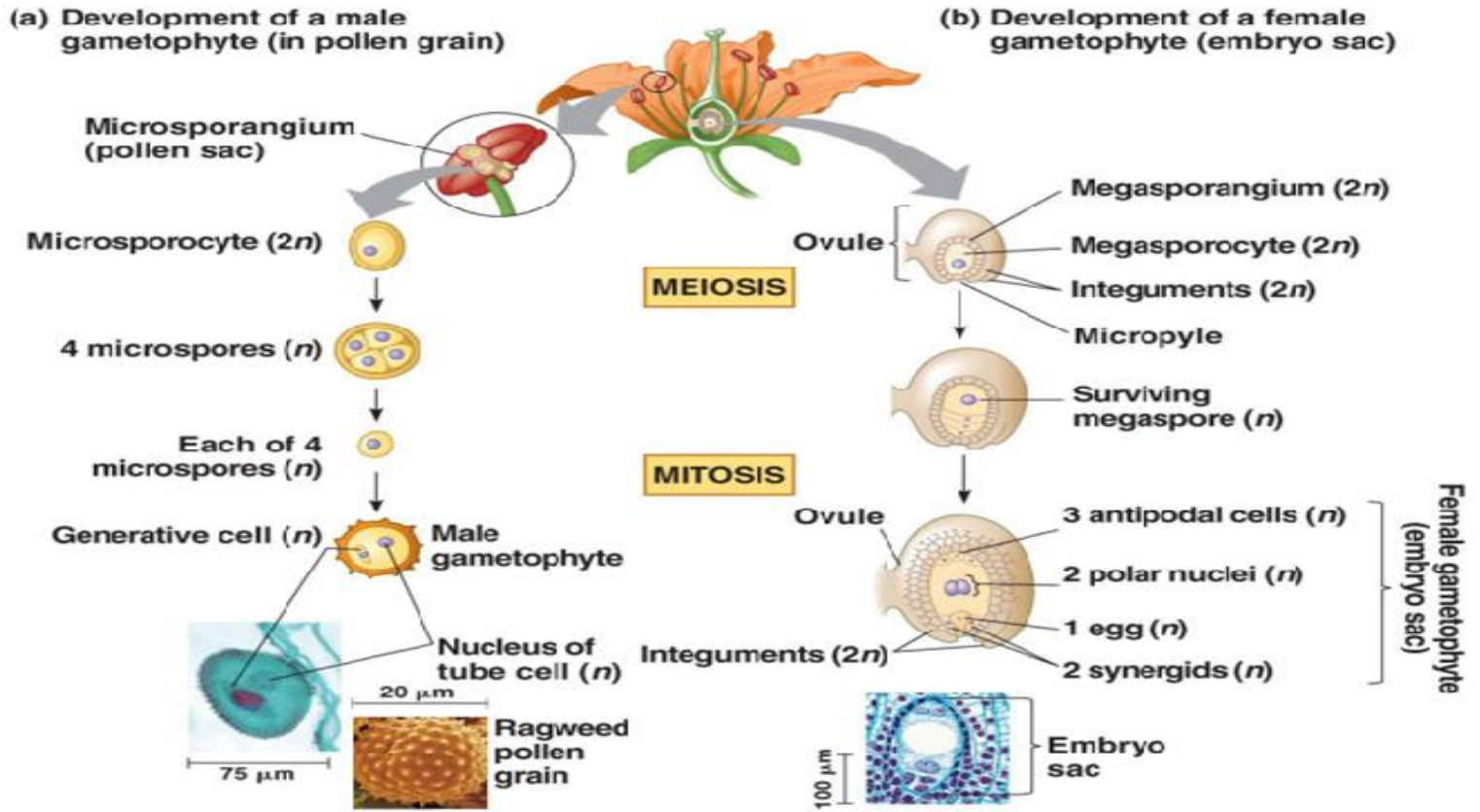




Bhagalpur National College, Bhagalpur

(A Constituent unit of Tilka Manjhi Bhagalpur University, Bhagalpur)

PPT Presentation for B.Sc. II- Microgametogenesis Vs Megagametogenesis

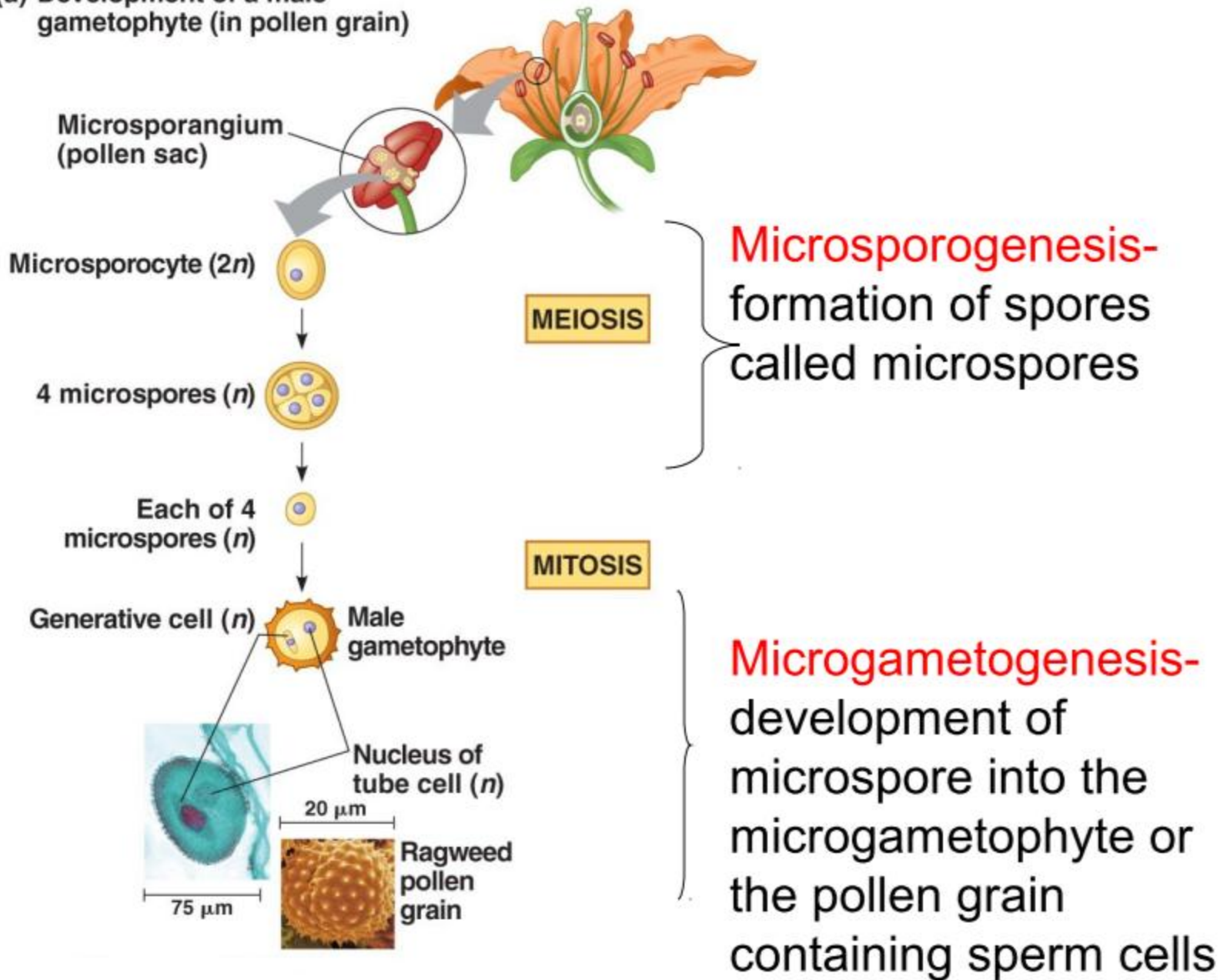


Presented by - Dr. Amit Kishore Singh

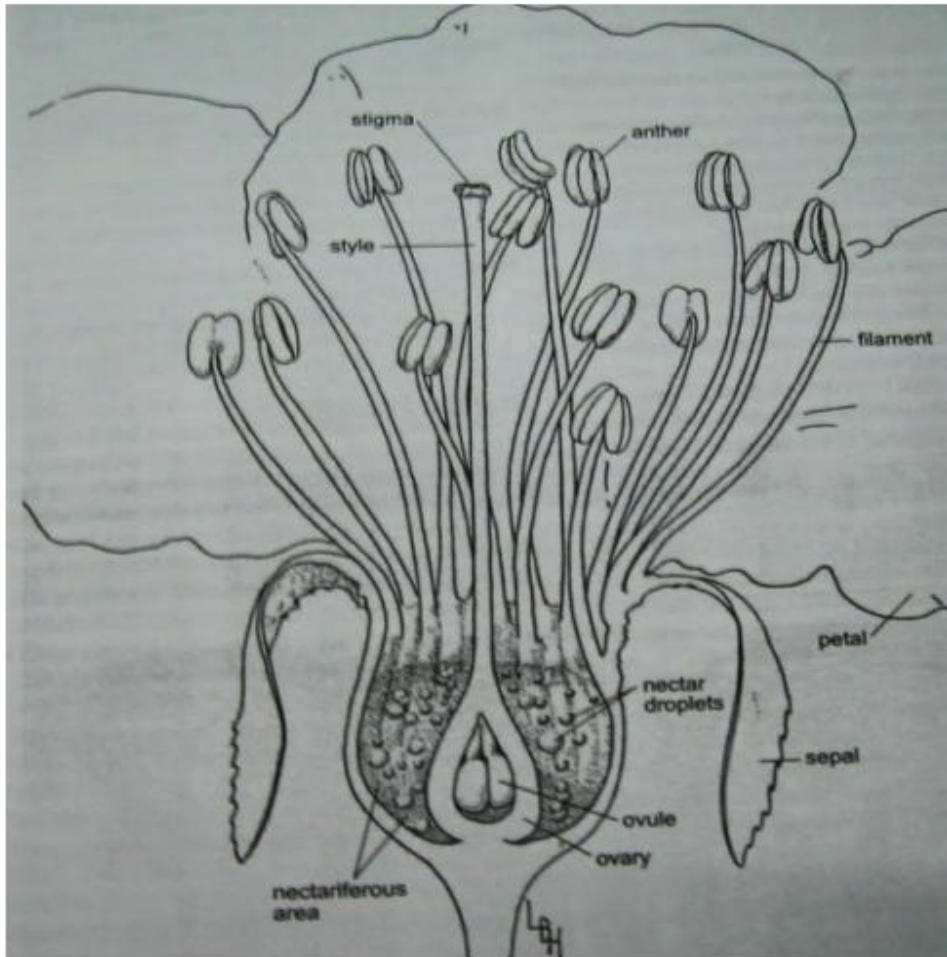
Department of Botany

B.N. College, Bhagalpur

(a) Development of a male gametophyte (in pollen grain)



Male reproductive part- Androecium



Longitudinal cutaway view of a cherry flower

Androecium-collective name for all stamens in a flower.

Anther- for pollen development

Filament- support, nutrient transport , pollen dispersal

Wind-pollinated species- filaments forms a flexible swivel joint, causes anther to flutter and shake out pollen

Structure of anther

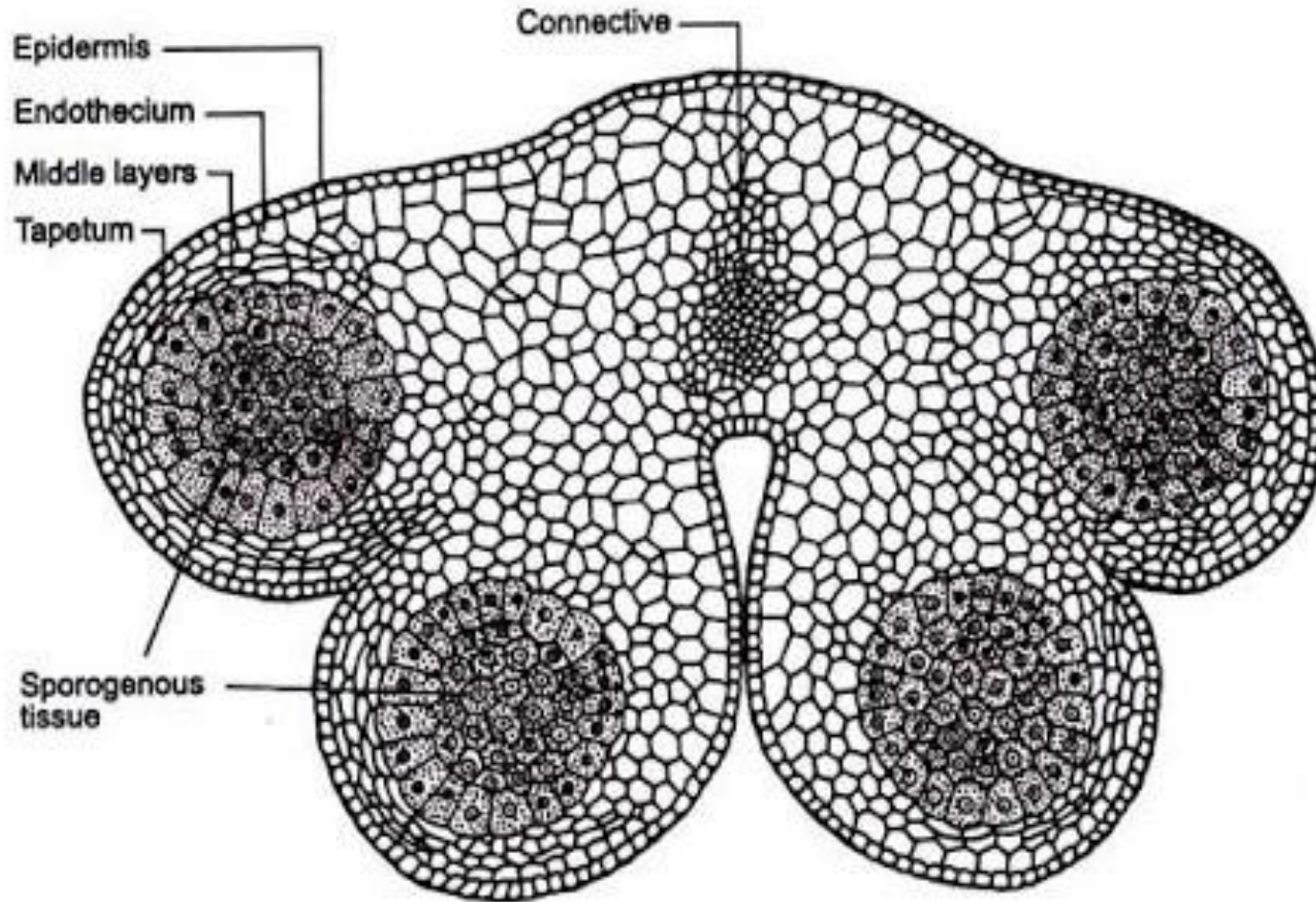
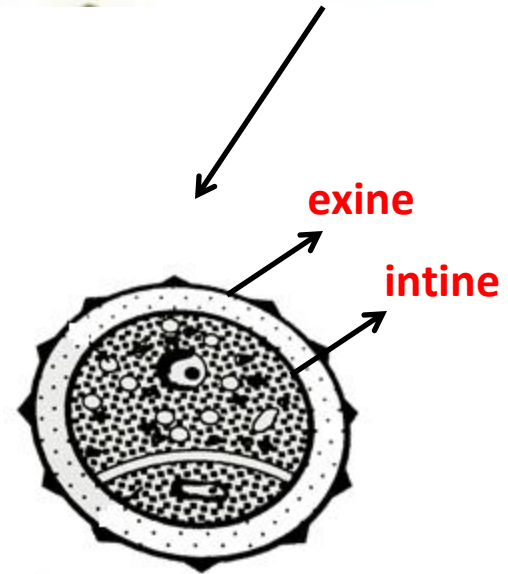
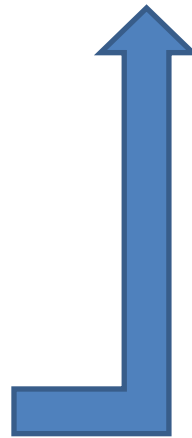
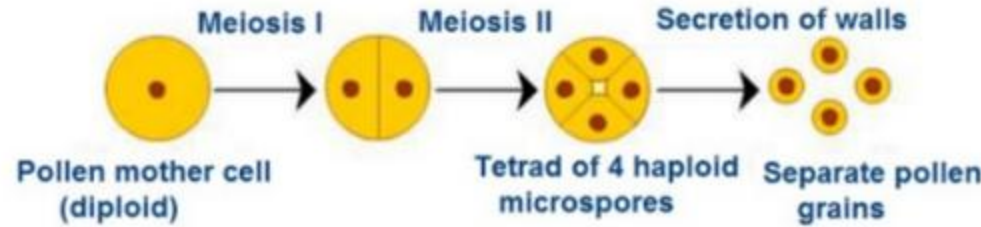
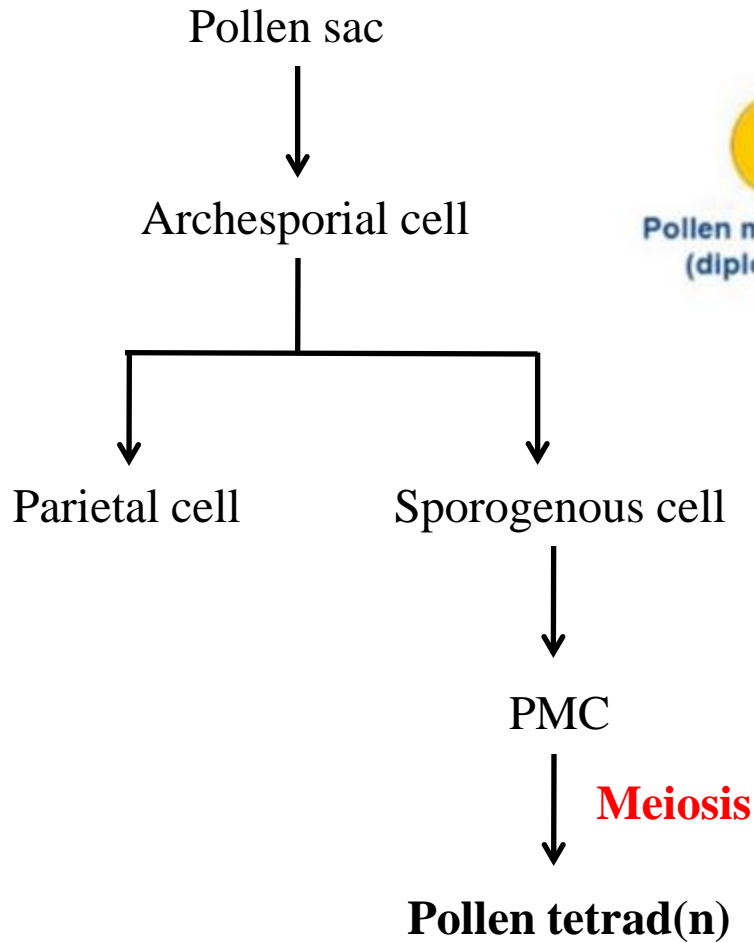


Fig. 1.1 : T.S. of the tetrasporangiate anther showing its various tissues

Microsporogenesis process

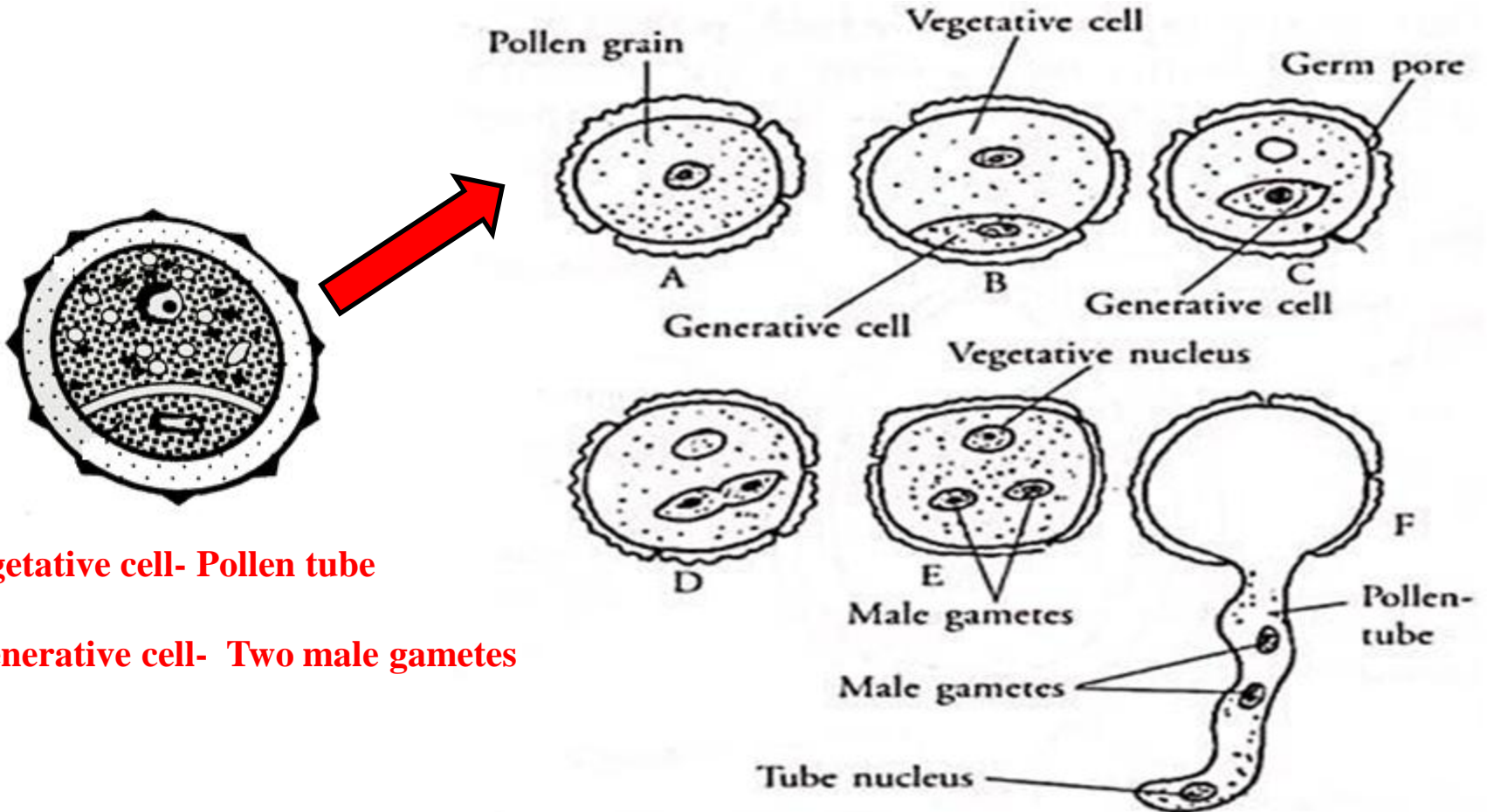


POLLEN GRAIN

- Pollen grain represent male gametophyte.
- They possess two layered wall.
- The outer wall is called exine and inner wall is called intine.
- The exine is composed of sporopollenin.
- The intine is composed of cellulose and pectin.

Microgametogenesis

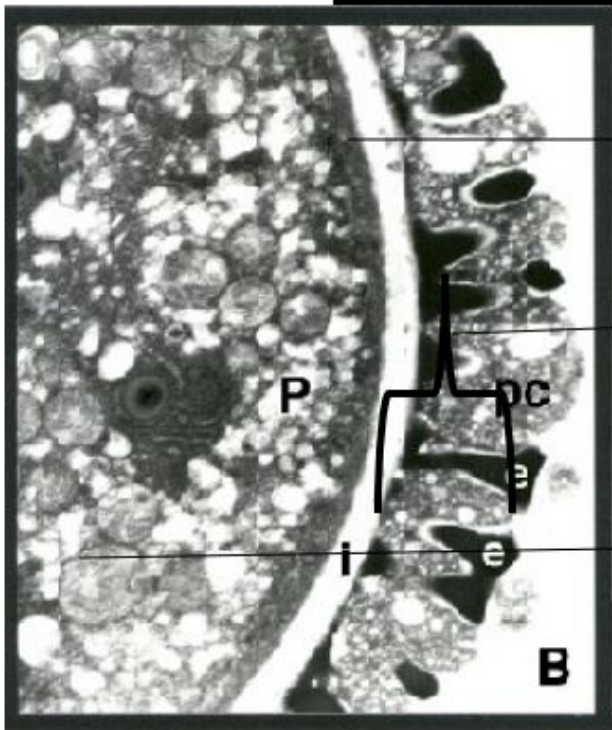
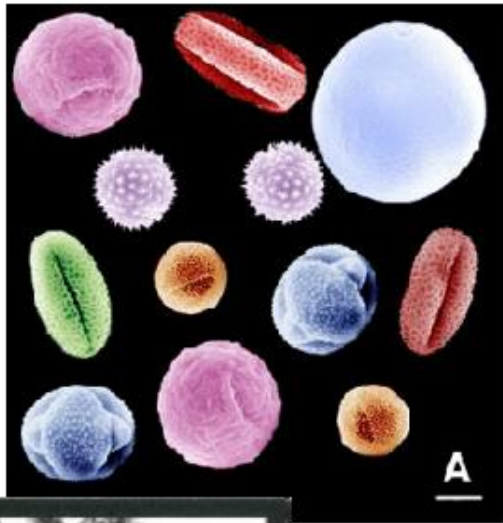
- **Microgametogenesis refers to development of male gamete**



• **Vegetative cell- Pollen tube**

• **Generative cell- Two male gametes**

Pollen from different species, variation in exine morphology



intine

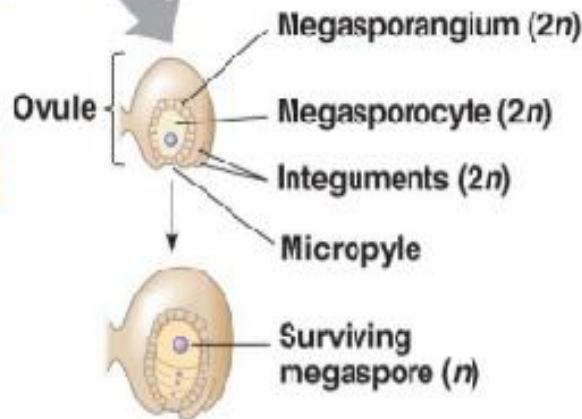
exine

cytoplasm

(b) Development of a female gametophyte (embryo sac)

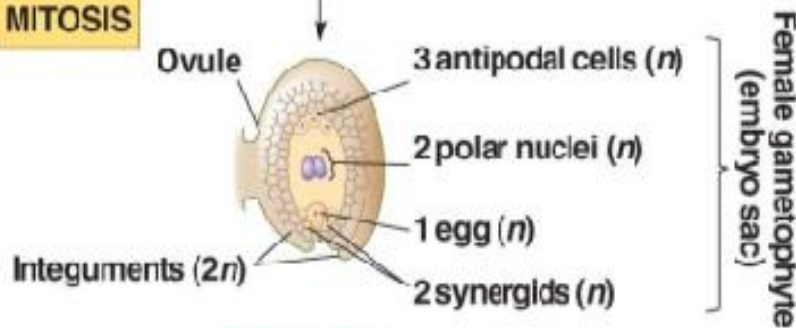


MEIOSIS



megasporogenesis

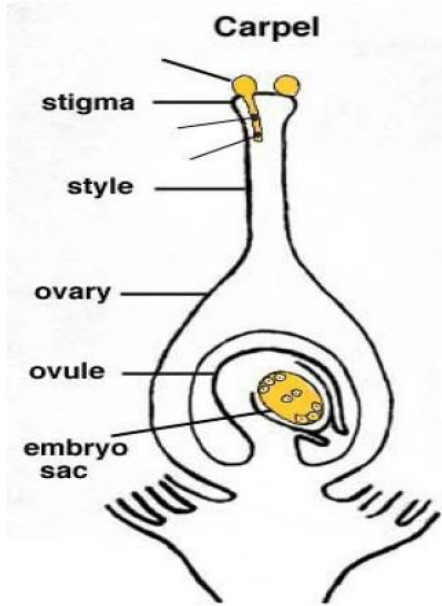
MITOSIS



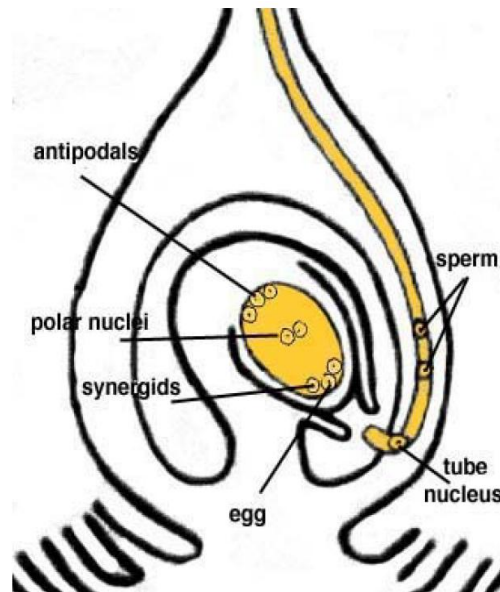
megagametogenesis



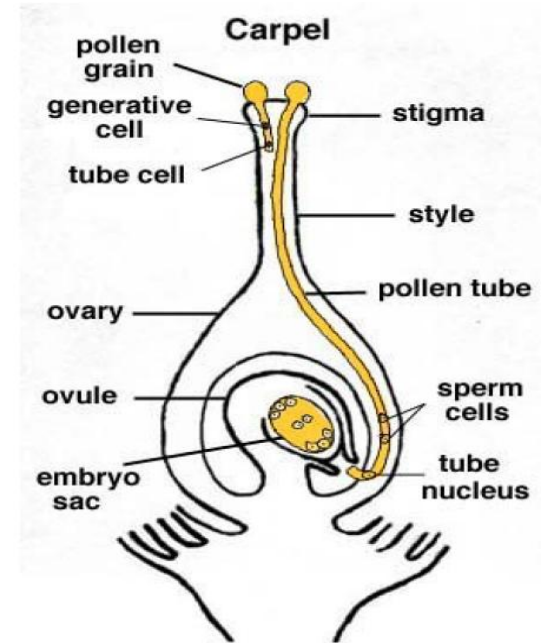
Embryo sac



A



B



C

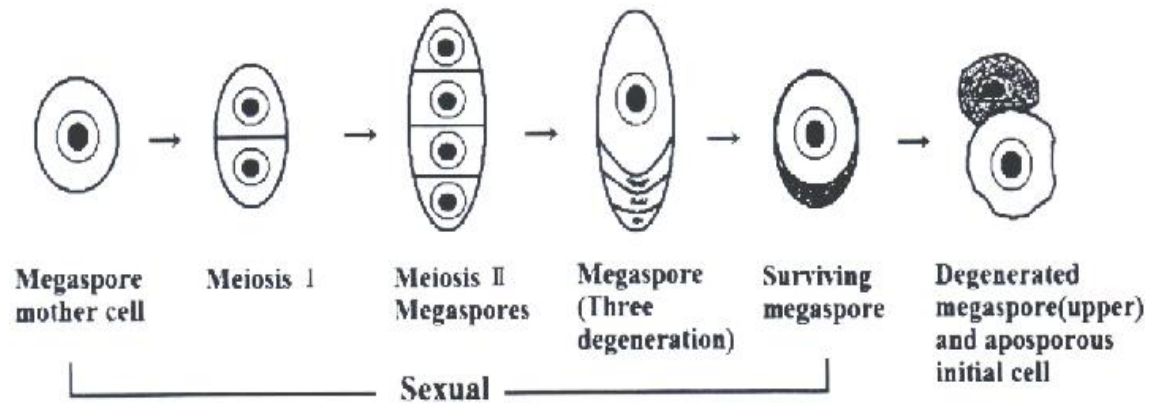
Megasporogenesis

- Gametogenesis in angiosperms to form the female gametes, like the male gametes, occurs in two stages: -

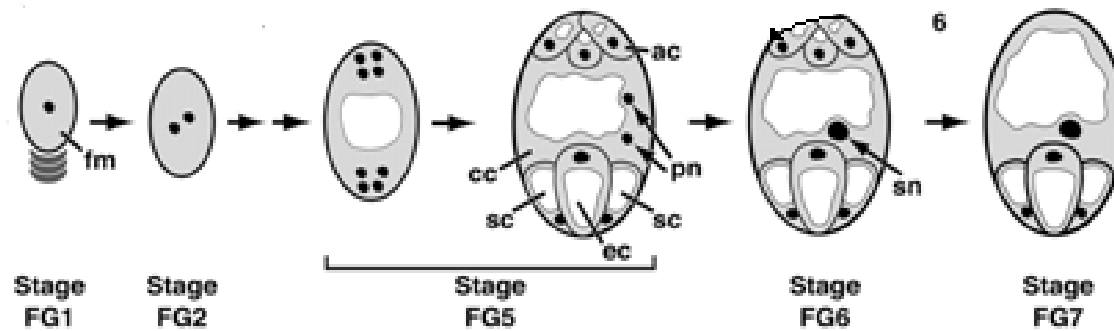
a) Megasporogenesis

b) Megagametogenesis

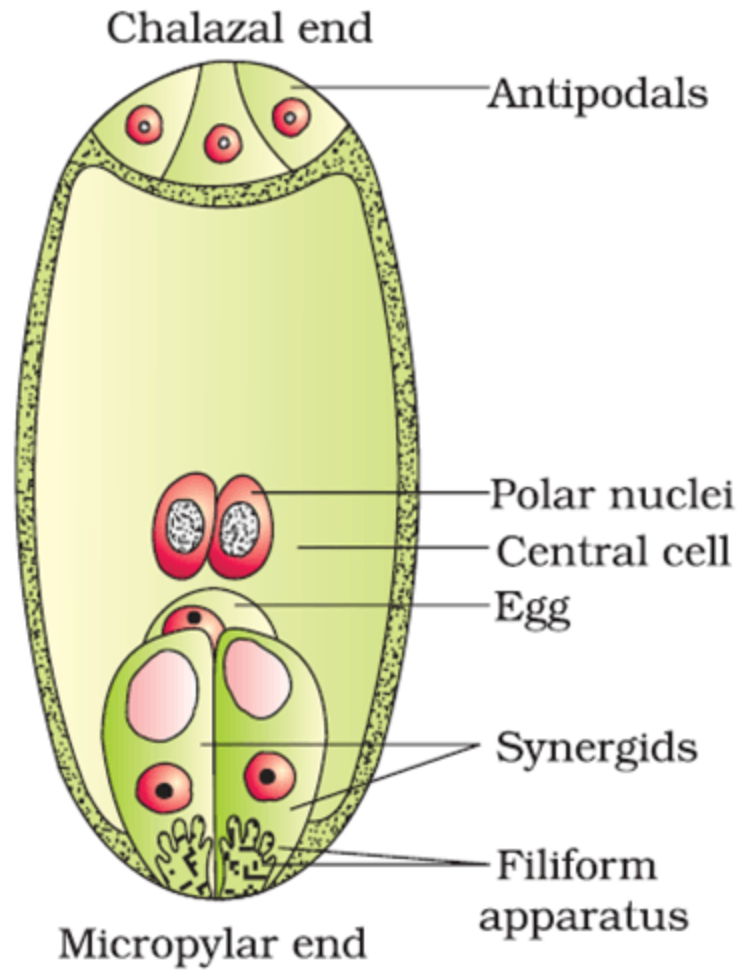
- The ovules are present inside the ovary in multiple lobes. A cell in the ovule differentiates into a megaspore mother cell (MMC).
- The MMC is diploid ($2n$). This megaspore mother cell undergoes meiosis (Meiosis I and Meiosis II) to form 4 haploid megaspores.
- In most of the plants 3 of the 4 megaspores degenerate and only one megaspore is left in each ovule. This process is known as **megasporogenesis**.
- The functional megaspore nucleus undergoes three mitotic divisions (**MI, MII and MIII**) resulting eight nucleate structures are formed.
- These eight cells after cell wall formation arranged in micropylar and chalazal end leading to the organization of typical embryo sac.
- Thus, embryo sac so formed will act as female gametophyte.



Megasporogenesis



Megagametogenesis



THANK YOU