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Dr. Sanjeev Kumar Vidyarthi
Department of Botany
Dr. L.K.V.D. College, Tajpur, Samastipur
L.N. Mithila University, Darbhanga

Male Gametophyte:

- Pollen grains or microspores are roughly spherical in outline.
- They are uninucleate and remain surrounded by a thick and spiny exine and thin intine.
- Mature pollen grains are shed at three-nucleate stage.
- These include prothallial nucleus, tube nucleus and generative nucleus in *G. Africanism and G. gnemon.*
- This three-nucleate stage is reached by first dividing the microspore nucleus mitotically into two and then one of them again gets divided.
- Further development is affected only in the pollen chamber.
- The intine comes out by rupturing the exine and forms a pollen tube.
- The tube nucleus migrates into the pollen tube.

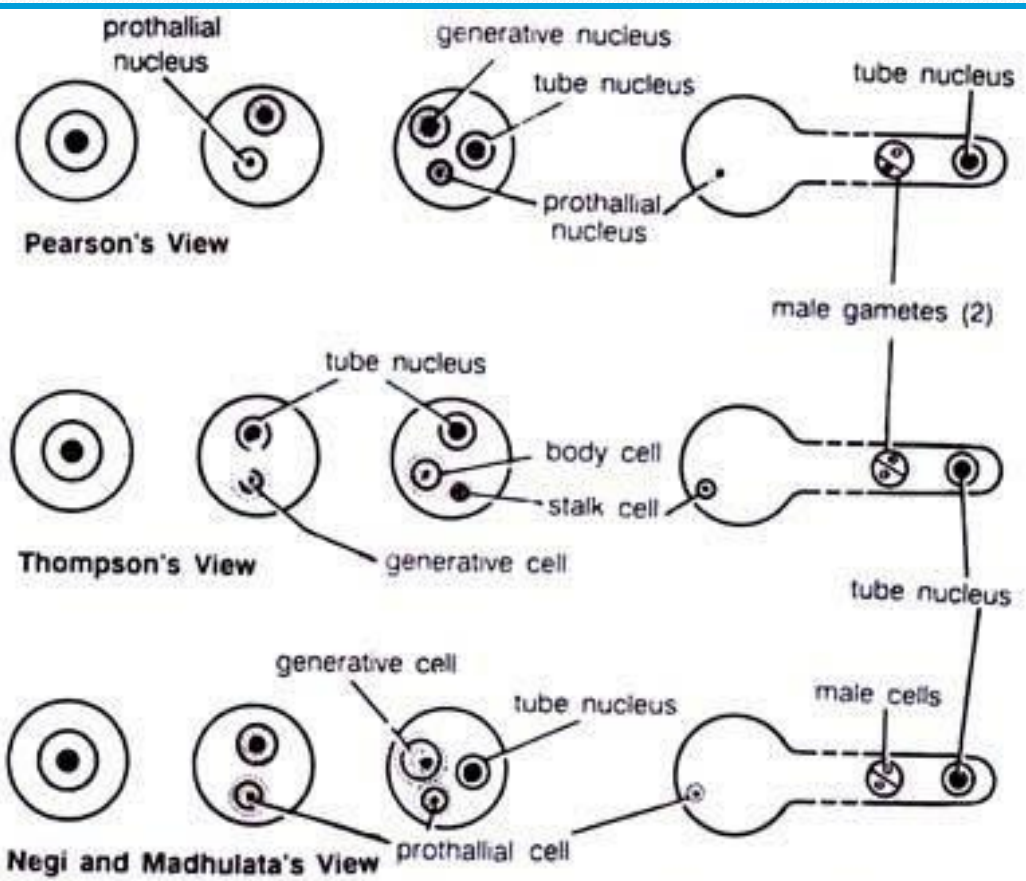

Fig. Diagrammatic representation of different views on the development of male gametophyte in *Gnetum*. (modified after Negi and Madhulata 1957)

- The generative nucleus also adopts the same course and divides into two unequal male gametes in the tube.
- Prothallial nucleus does not enter the pollen tube.
- The prothallial cell does not form at all in the male gametophyte.
- The microspore nucleus divides into a tube nucleus and a generative cell.
- The latter divides into a stalk cell and body cell.
- The tube nucleus and body cell enter in the pollen tube where the body cell divides into two equal male gametes.
- The microspore nucleus in *Gnetum gnemon* and *G. ula* divides into a small lenticular cell and a large cell.
- The lenticular cell does not take part in the further development and ultimately disappears.

- The other large nucleus divides into a tube nucleus and a generative cell, both of which pass into the tube.
- The generative cell divides into two equal male gametes in the tube.
- A stalk cell is never formed in these species.

Pollination:

- Wind helps in carrying the pollen grains up to the micropylar tube of the ovule.
- The micropylar tube secretes a drop of fluid in which certain pollen grains get entangled and reach up to the pollen chamber.
- The nucellus cells below the pollen chamber are full of starch.

Fertilization:

- The fertilization in *Gnetum* has been studied only by a few workers. Vasil (1959) studied this phenomenon in *G. ula*.

- At the time of fertilization, the pollen tube pierces through the membrane of the female gametophyte just near to a group of densely cytoplasmic cells.
- The tip of pollen tube bursts and the male cells are released.
- One of the male cells enters the egg cell.
- The male and female nuclei, after lying side by side for some time, fuse with each other and form the zygote.
- According to Swamy (1973), the only identifying features of the zygote are its spherical shape and dense cytoplasm.
- Both the male cells of a pollen tube may remain functional if two eggs are present close to the pollen tube.