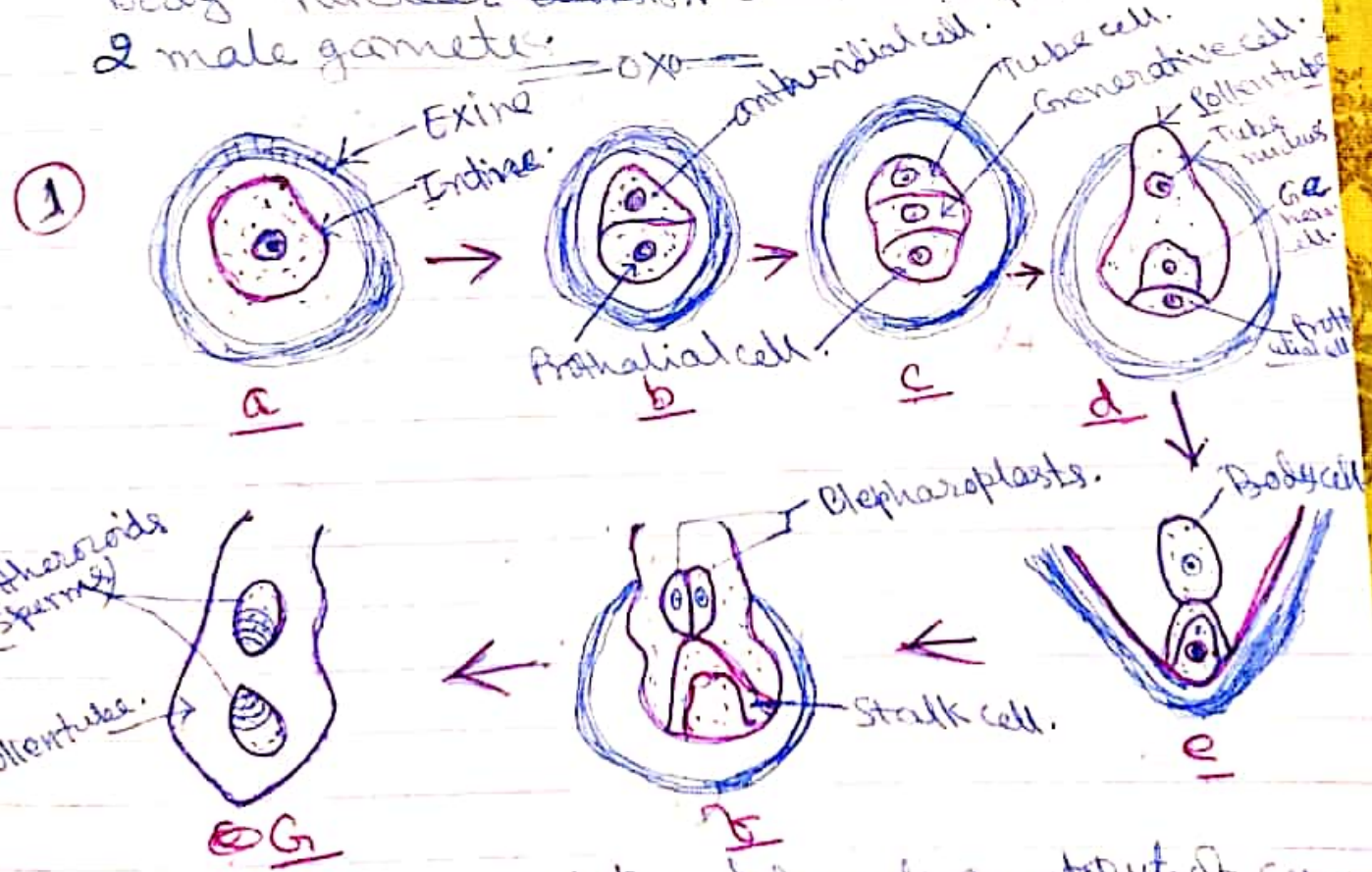


Diagram showing the development of male gametophyte in taxus.

In Gnetum: →

The microspore of Gnetum divides to form a small prothallial cell and large antheridial cell. The antheridial cell divides to form a tube nucleus and a generative nucleus. The generative nucleus gets surrounded by a cytoplasmic sheath and divides into a stalk and body nuclei. Both these nuclei are surrounded by a common cytoplasmic sheath. The pollination takes place at the 3-nucleate stage. Further development of male gametophyte takes place in the pollen chamber of the ovule. The tube cell grows out to form a pollen tube in which body nuclear-division divides to produce 2 male gametes.



1 Fig. Showing Development of male gametophyte of Cycas

Q. → Give ~~an~~ a comparative account of the development of male gametophytes in the members of gymnosperms.

Ans: → All the members of Gymnosperms are heterosporous. The male gametophyte develops from the microspores and the female gametophyte from megaspore. Thus the microspore is the 1st cell-generational cell of the male gametophyte.

The male gametophytes in Gymnosperms show variations regarding their release from the sporangia, the no. of prothallial cells, size and ~~total~~ motility of sperms. They also show variations in their time of formation and discharge. They complete their development partly in the microsporangia and partly in the microsporangia of the ovule. A short comparative account of morphology of male gametophyte in Gymnosperms is as follows: —

In cycads: → The microspore divides in the formation of two cells - a small prothallial and a large antheridial cell. The antheridial cell is larger in size. It divides to form a small generative and a large tube cell. The prothallial cell is persistent and does not undergo any further division. Pollination takes place at this stage. After reaching the pollen chamber further development of 3-celled microspore takes place in it. Tubic cell ~~develops~~ develops a pollen tube in which tube nucleus...

9/10  
cells - a smaller prothallial cell and a larger antheridial cell. The prothallial cell divides once again resulting into the formation of two prothallial cells. The prothallial cells are short lived and represent the reduced vegetative tissue of male gametophyte. The antheridial cell divides in a smaller generative and a larger tube-cell. Pollination occurs at 4-celled stage. Further development of male gametophyte takes place in the pollen chamber. The tube nucleus forms a long pollen tube in which separated the stalk cell. The body cell becomes male cells or male gametes, which are slightly unequal. Each male gamete has a larger nucleus and a scanty cytoplasm. They are non-flagellate and microscopic.

### In Taxus: →

The development of male gametophyte in Taxus was studied by Branchfield (1939) in culture medium.

In case of Taxus pollination takes place at uninucleate stage. The development of male gametophyte starts in the nucellus. The microspore divides in a tube cell and a generative cell. Here prothallial cell is absent. Tube cell forms a short pollen tube in which tube nucleus migrate and lies at its tip. The generative cell divides to form a stalk and a body cell. The body cell divides to form two unequal male gametes.

Sterling (1948) noticed that in T. cuspidata, the body cell and stalk nucleus move into the pollen tube.