

## **Course- B.Sc.Part-I Botany Subsidiary**

### **PAPER-I**

#### **Topic - Male gametophyte of Pinus (Gymnosperm)**

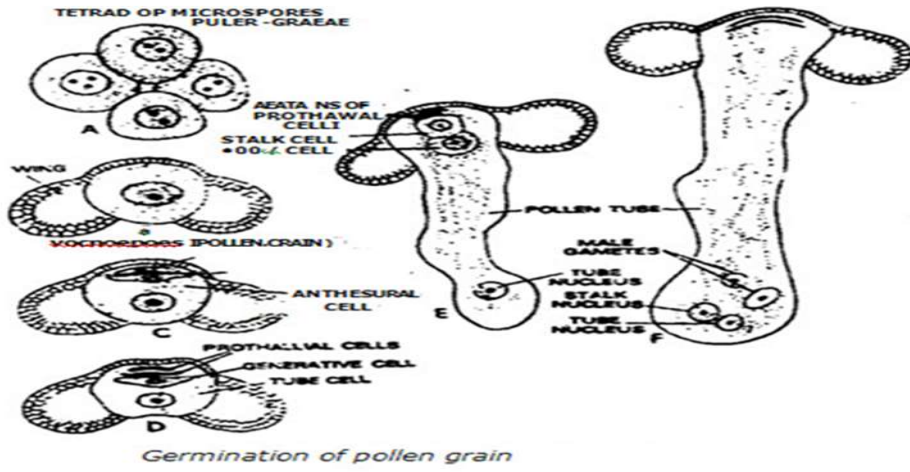
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Male gametophyte of Pinus( Sequential development of Pollen grain in Pinus to develop male gametophyte)

Male gametophyte of Pinus

1. Microsporophyll is the microspore containing structure. The microsporangium is sessile and surrounded by a single layer of cells.
2. Each microsporangium produces several microspores. Each microspore is covered by inner intine and outer exine. Microspore is winged.
3. Microspore is the first cell of male gametophyte.
4. Microspore begins to germinate within the microsporangium.
5. The microspore nucleus divides to form a very small first Prothallial and a large cell.
6. The large cuts off a second Prothallial cell and the antheridial cell
7. At this stage Microspore is shed and falls in close vicinity to the female gametophyte. Further development of male gametophyte is inside the female gamertophyte..
8. The two Prothallial cell degenerate and the antheridial cell divide to form a small generative cell and a large tube cell( tube nucleus)..
9. The tube nucleus regulates the growth of the pollen tube in close proximity to the nucellus of Female gametophyte.
10. A mature ovule ( megasporangium) secretes a mucilaginous substance from the micropyle. A large number of Pollen grains gets attached to the mucilaginous substance.
11. A few of them are drawn inside when the mucilage dries up and reaches close to the apex of the nucellus.
12. The tube cell grows and protrudes to form Pollen tube. The pollen tube is the proliferation of the intine of the microspore. The pollen tube penetrates the nucellus.
13. The generative cell then divides to form a sterile stalk cell and a fertile body cell.
14. The body cell then divides to form two non-motile unequal sized male gametes( Sperms).This marks the end of the development of male gametophyte of Pinus.



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