

Topic: Megasporogenesis
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Development of Megaspore Mother Cell

- The ovule develops as multicellular placental outgrowth including the epidermal and a number of hypodermal cells.
- With further development, this gives rise to nucellus and one or two integuments from its basal region.
- In ovules, with two integuments, usually the inner one is formed first than the outer one. The inner one is more delicate and inconspicuously developed than the outer one.
- One hypodermal cell of the nucellus becomes differentiated from the other by its bigger size, dense cytoplasm and conspicuous nucleus, called archesporial cell.
- The archesporial cell divides transversely and forms an inner primary sporogenous cell and an outer primary parietal cell.
- The primary sporogenous cell functions as megaspore mother cell and the primary parietal cell undergoes repeated vertical divisions and forms layers of parietal cells.

- Sometimes, the archesporial cell does not divide and directly functions as megaspore mother cell.

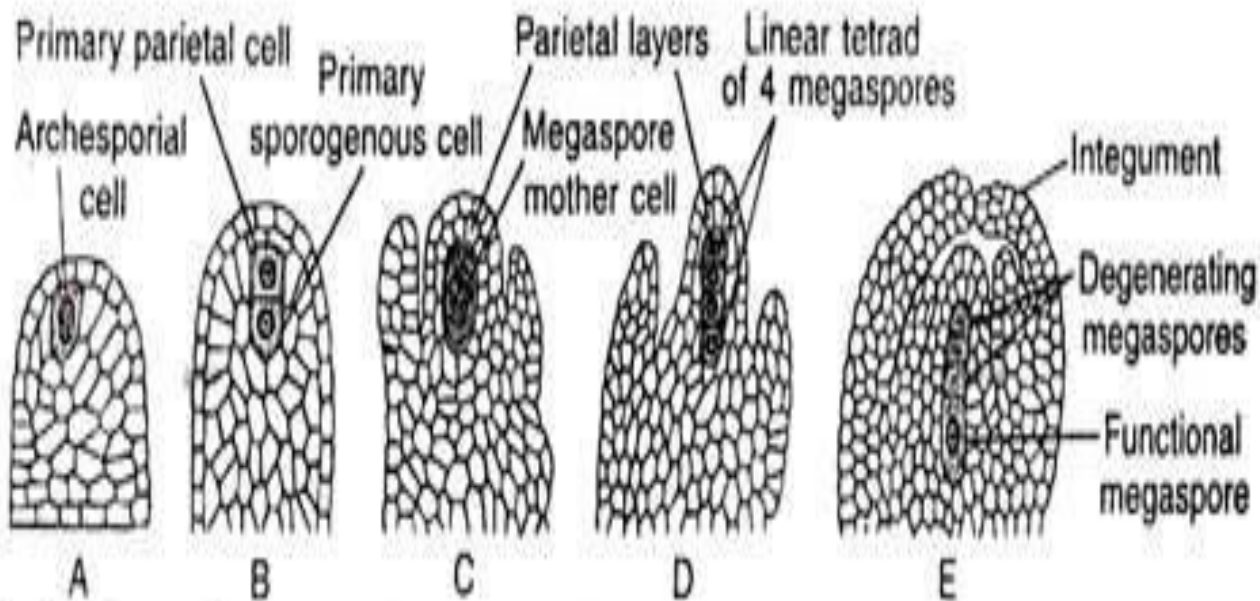


Fig. A-E. Stages of development of megaspore mother cell and megasporogenesis (development of megaspore)

Megasporogenesis (Development of Megaspores)

- The megaspore mother cell is diploid ($2n$), which undergoes meiosis and forms four haploid (n) megaspores.
- The first division of megaspore mother cell is transverse, forming two cells. Both the cells again divide transversely and thus four (4) haploid megaspores are formed.
- The megaspores are then arranged in an axial row, called linear tetrad.
- Out of four megaspores, only one which remains towards the chalazal end behaves as functional megaspore and the other three which remain towards the micropylar end, gradually degenerate.
- The functional megaspore forms the female gametophyte i.e., the embryo sac.