

Topic: Microsporogenesis

B.Sc. Botany Sub. II

Group: B

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Microsporogenesis (Development of Microspores i.e., Pollen Grain):

- Microspores i.e., the pollen grains, are developed inside microsporangia.
- The microsporangia are developed inside the corners of the 4-lobed anther.
- The young anthers are more or less oblong in shape in section and made up of homogeneous mass of meristematic cells without intercellular space.
- With further development, the anther becomes 4-lobed. The outer layer of anther is called epidermis.
- Below the epidermis, at each corner, some cells become differentiated from others by their dense protoplasm - archesporium or archesporial cells.
- Each archesporial cell then divides mitotically and forms an outer primary parietal cell and an inner primary sporogenous cell.

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- The outer primary parietal cells form primary parietal cell layer at each corner.
 - Below the parietal cell layer, the primary sporogenous cells remain in groups i.e., the sporogenous tissue.
 - The cells of primary parietal layer then divide both periclinally and anticlinally and form multilayered antheridial wall.
 - The innermost layer of antheridial wall, which remains in close contact with the sporogenous tissue, functions as nutritive layer, called tapetum.
 - The primary sporogenous cells either directly function as spore mother cells or divide mitotically into a number of cells which function as spore mother cells.
 - The spore mother cell undergoes meiotic division and gives rise to 4 microspores arranged tetrahedrally.

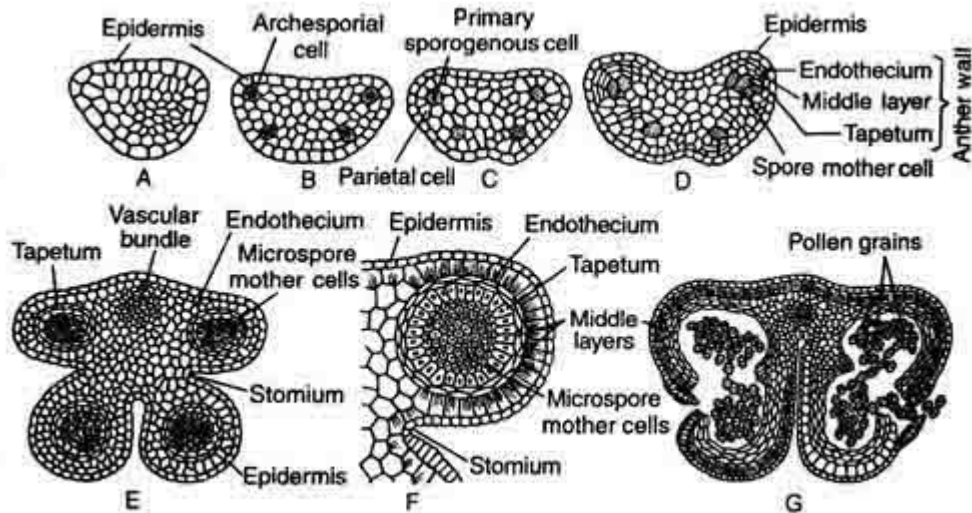


Fig. : Stages of anther development and microsporogenesis : A-D. Developmental stages, E. T.S. of developing anther, F. Enlarged microsporangia with wall, and G. T.S. of mature anther showing liberation of pollen grains

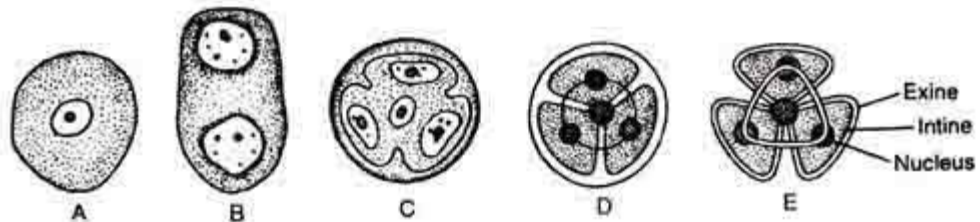


Fig. : Different stages of development of microspore from microspore mother cell : A. Microspore mother cell, B. Diad stage, C. Tetrad stage, D. Cleavage of protoplast and formation of pollen grains, and E. Four microspores i.e., pollen grains with exine and intine