

**Topic: Gnetum; Reproduction**  
**B.Sc. Botany Hons. II**  
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## **Megasporangium, Megasporogenesis and Female Gametophyte:**

- Four to ten ovular primordia differentiate on the annular meristematic ring. This ring develops below each collar of the female cone in the same manner as that of the male cone.
- The ovular primordium divides and re-divides several times to form a mass of cells.
- All the three envelopes of the female flower develop around this mass of cells.
- The innermost third envelope remains fused with the nucellus at the base while its upper portion remains free and form the long micropylar tube or **'style'**.
- In the young conditions, an outer epidermal layer is distinguishable in the nucellus.

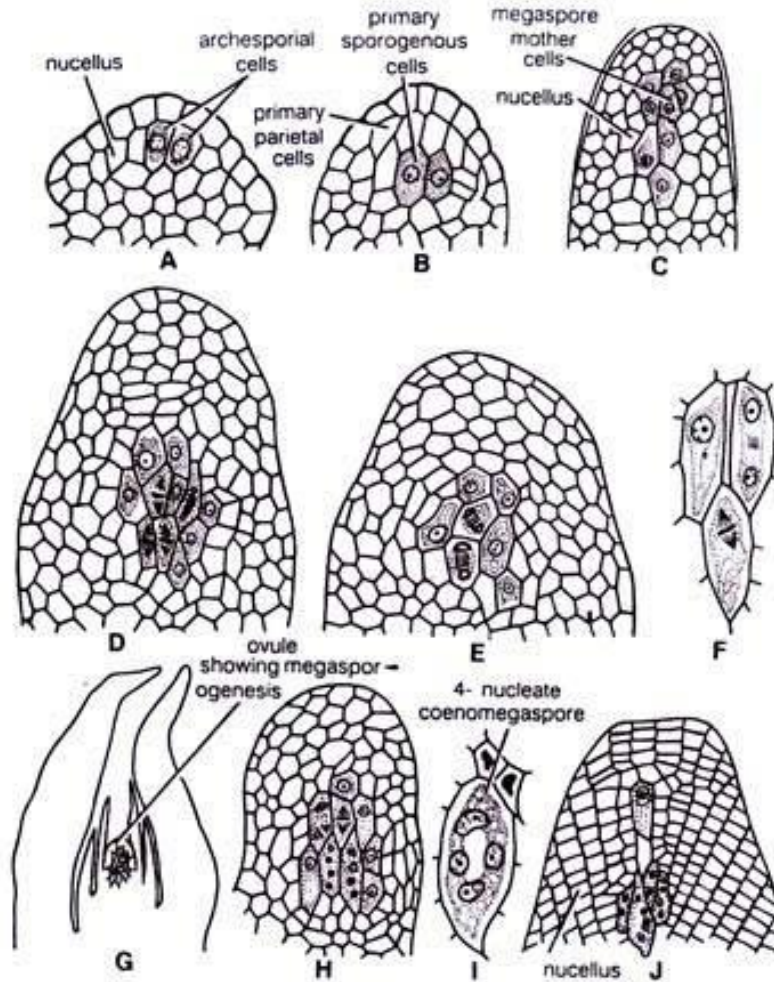
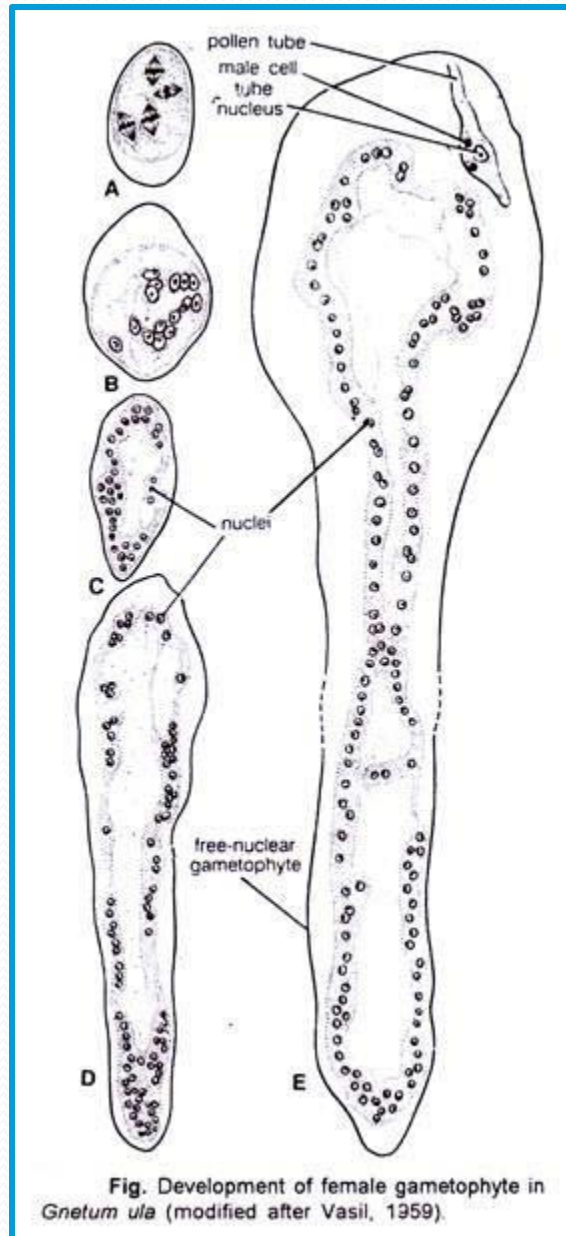


Fig. *Gnetum*. Showing stages of megasporogenesis in different species. (A, C, D & E, in *Gnetum ulia*; B, F to J in *Gnetum gnemon*).

- Two to four archesporial cells develop below the epidermis at a later stage.
- The archesporial cells divide periclinally to form outer primary' parietal cells and inner sporogenous cells.
- The primary parietal cells and the epidermal layer divide periclinally and anticlinally several times resulting into a massive nucellus.
- The sporogenous cells divide and re-divide to form megaspore mother cells which remain arranged in linear rows.
- All the megaspore mother cells may divide reductionally and form tetrasporic embryo-sacs but ultimately all, except one, degenerate.
- The free-nuclei are formed in the female gametophyte leaving a vacuole in the centre
- . The female gametophyte is tetrasporic in development.



- It is broader towards the micropylar end and it tapers towards the chalazal end. The nuclei near the chalazal end get surrounded by cell walls while those towards micropylar end remain free.
- Gametophyte is thus partly cellular and partly-nuclear.
- The archegonia are absent in *Gnetum*.
- Certain nuclei near the micropylar end start to function as egg nuclei. According to Swamy (1973) the only nucleus in a uninucleate cell or one of the nuclei in a multinucleate cell enlarges and functions as the egg in *G. ula*.
- The nucellar beak is absent in *Gnetum*.
- The megaspore mother cell divides reductionally and forms four free haploid nuclei in the mother cell.
- Megaspore tetrads are never formed in *Gnetum*.