

# Topic: Embryo

B.Sc. Botany Subs. II  
Group: B

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## Development of dicot embryo in *Capsella bursa-pastoris* (Crucifer type):

- For the first time Hanstein (1870) worked out the details of the development of embryo in *Capsella bursa-pastoris*, a member of Cruciferae.
- The oospore divides transversely forming two cells, a terminal cell and basal cell.
- The cell towards the micropylar end of the embryo sac is the suspensor cell (i.e., basal cell) and the other one makes to the embryo cell (i.e., terminal cell).

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- The terminal cell by subsequent divisions gives rise to the embryo while the basal cell contributes the formation of suspensor.
  - The terminal cell divides by a vertical division forming a 4-celled 1-shaped embryo.
  - In certain plants the basal cell also forms the hypocotyl (i.e., the root end of the embryo) in addition of suspensor.
  - The terminal cells of the four-celled pro-embryo divide vertically at right angle to the first vertical wall forming four cells.

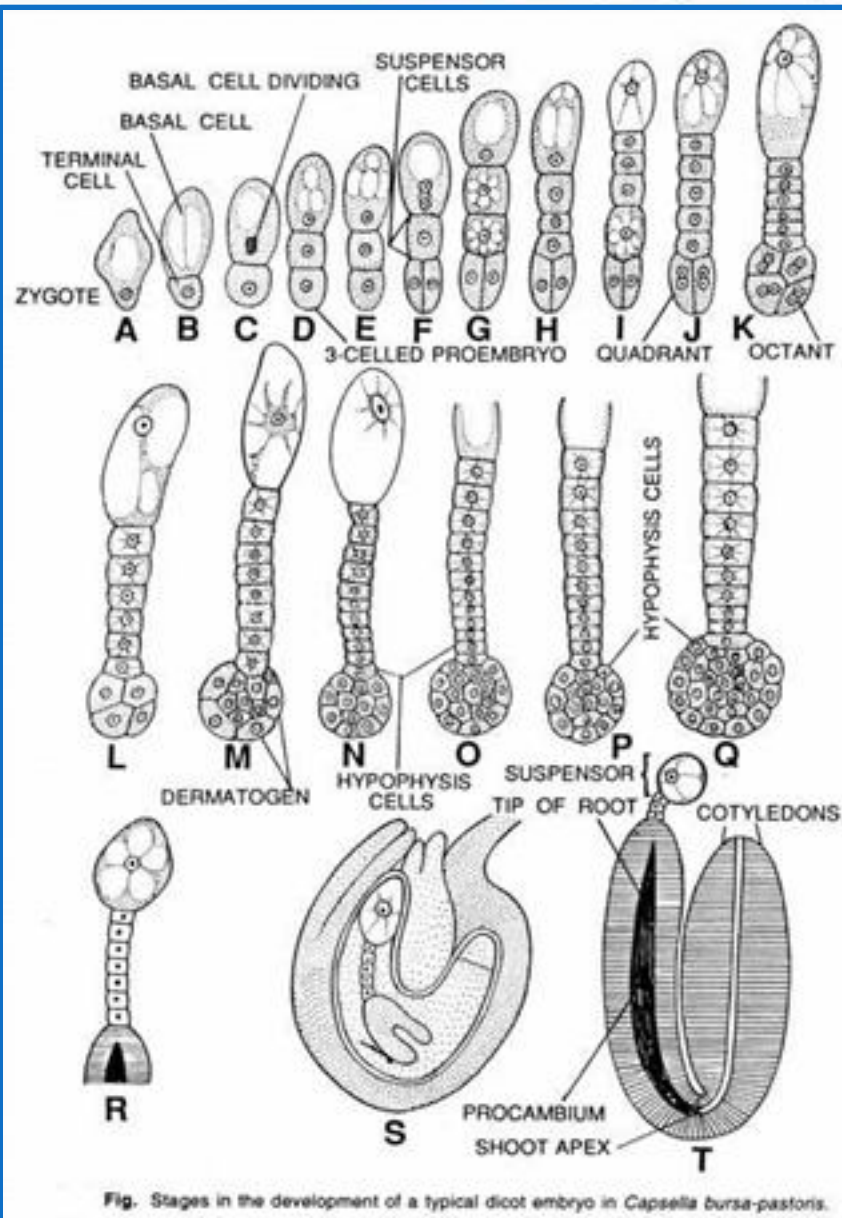




Fig. Stages in the development of a typical dicot embryo in *Capsella bursa-pastoris*.

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- Now each of the four cells divides transversely forming the octant stage (8-celled) of the embryo.
  - The four cells next to the suspensor are termed the hypo-basal or posterior octants while the remaining four cells make the epibasal or anterior octants.
  - The epibasal octants give rise to plumule and the cotyledons, whereas the hybobasal octants give rise to the hypocotyl with the exception of its tip.
  - Now all the eight cells of the octant divide periclinally forming outer and inner cells.

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- The mature embryo consists of a short axis and two cotyledons. Each cotyledon appears on either side of the hypocotyl. In most of dicotyledons, the general course of embryogenesis is followed as seen in *Capsella bursa-pastoris*.

To be continued in next