UNIT-5

STRUCTURAL ORGANIGATION OF FLOWER

SANCHALI KUNDU
GUEST LECTURER
DEPARTMENT OF BOTANY
PANIHATI MAHAVIDYALAYA

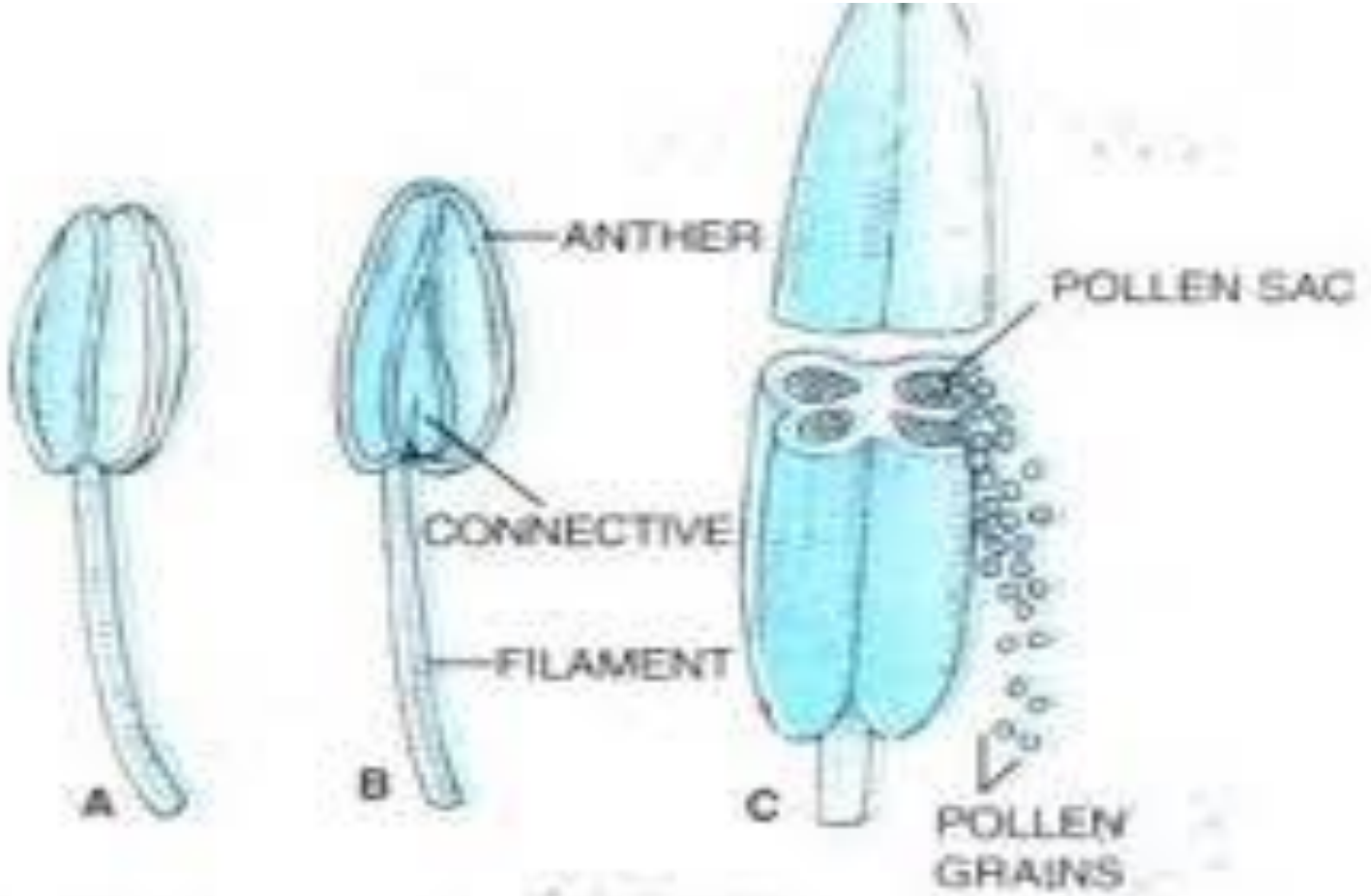


Fig. 2.3. Stamen. A. Ventral view; B. Dorsal view; C. Three dimensional cut section of Anther (Enlarged).

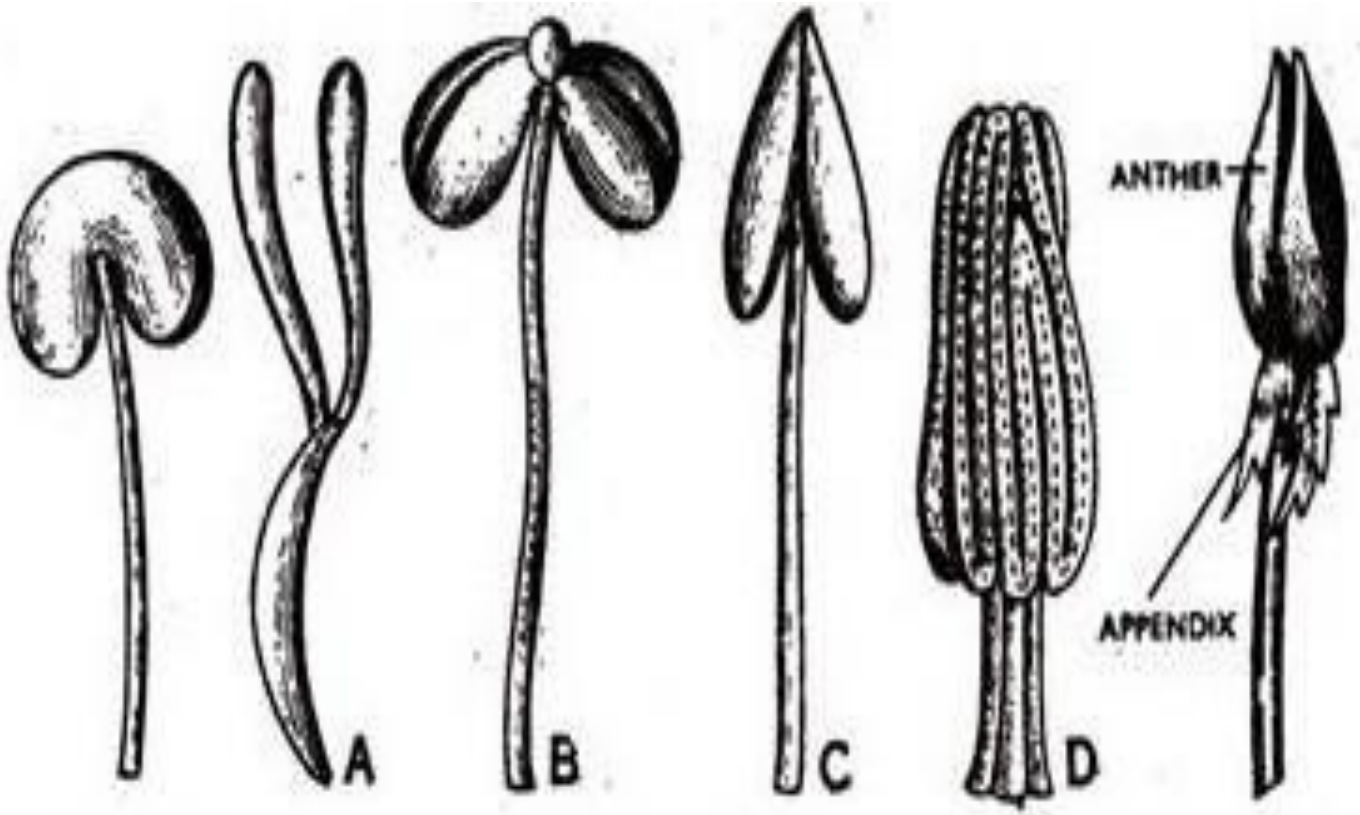


FIG. 347 FIG. 348 FIG. 349

ANTHER. FIG. 347. Unilocular and reniform in *Hibiscus rosa-sinensis*. FIG. 348. A. Linear in *Acalypha*. B. Rounded in *Mercurialis*. C. Sagittate in *Vinca*. D. Sinuous in *Cucurbita maxima*. FIG 349. Appendiculate in *Erica cinerea*.

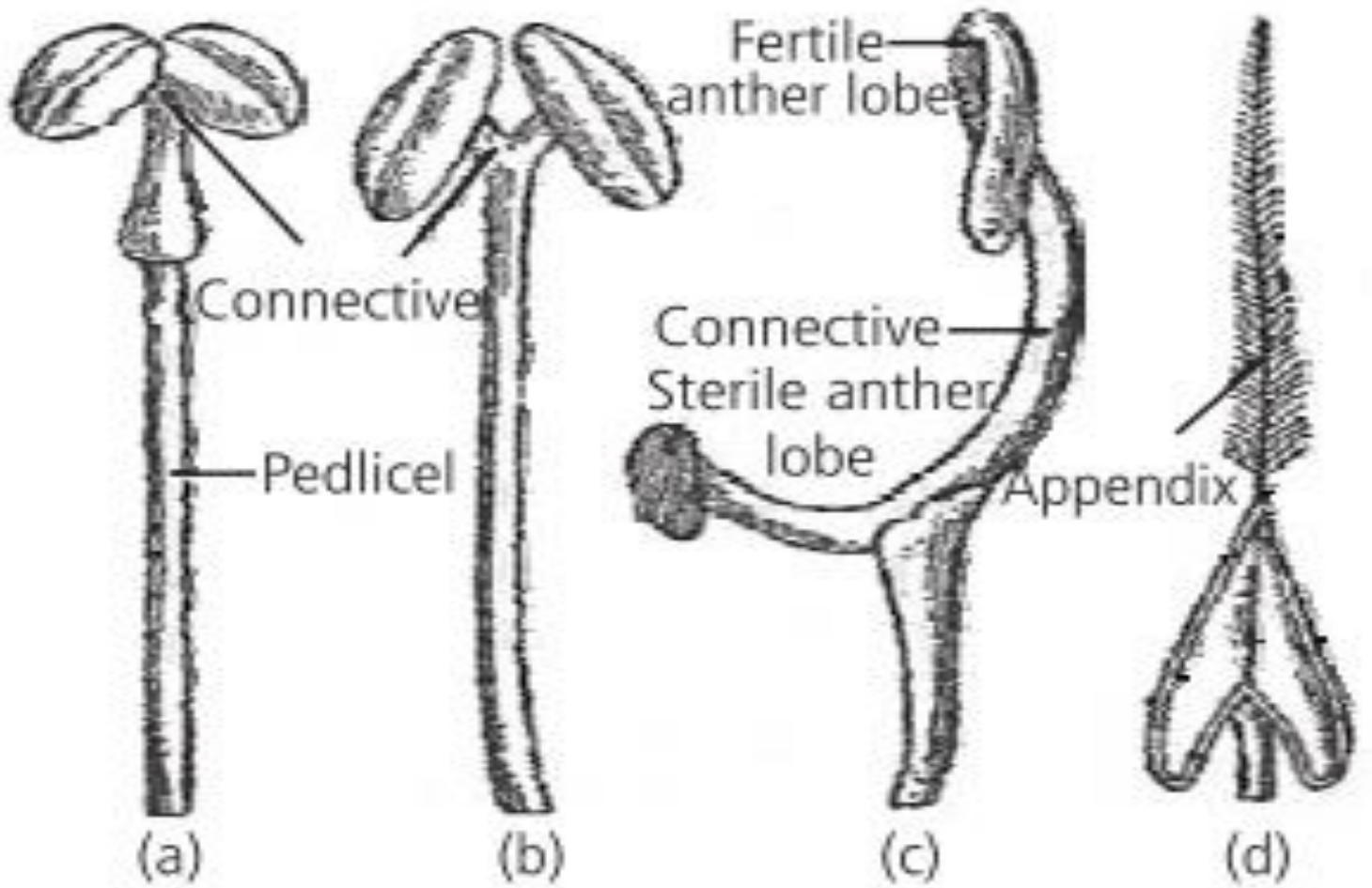
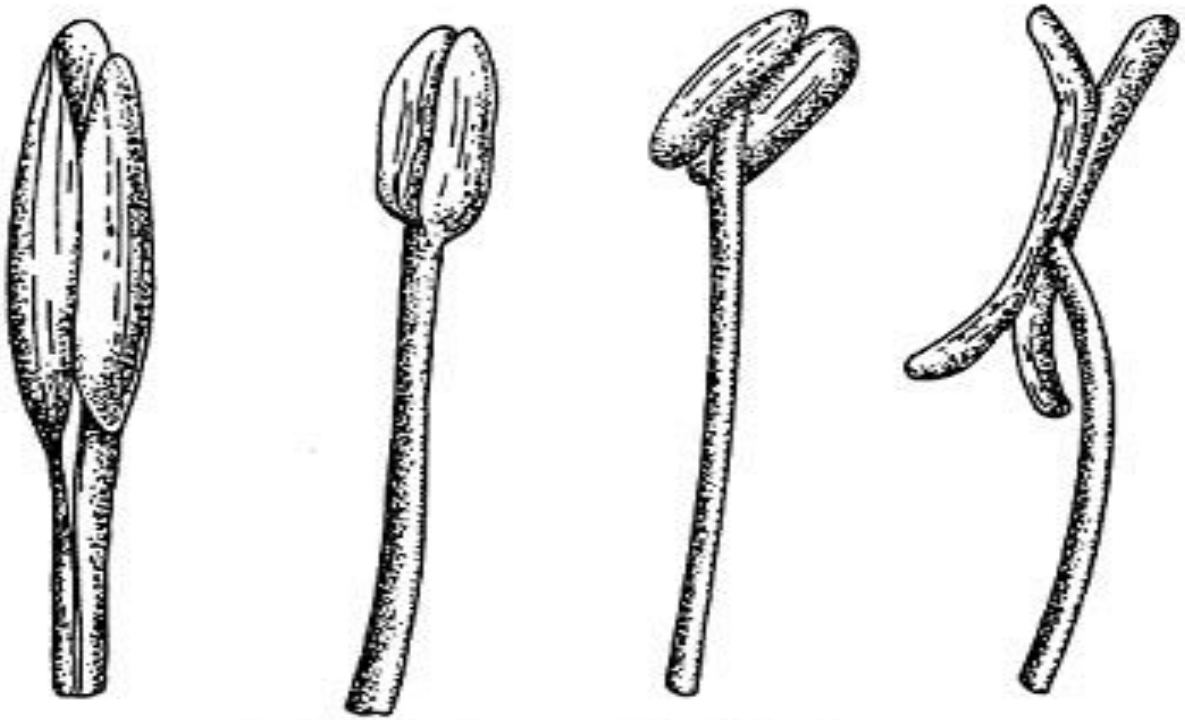


Fig.: Types of connective : (a) Discrete (b) Divaricate (c) Distractile (d) Appendiculate



a. adnate b. basifixed c. dorsifixed d. versatile

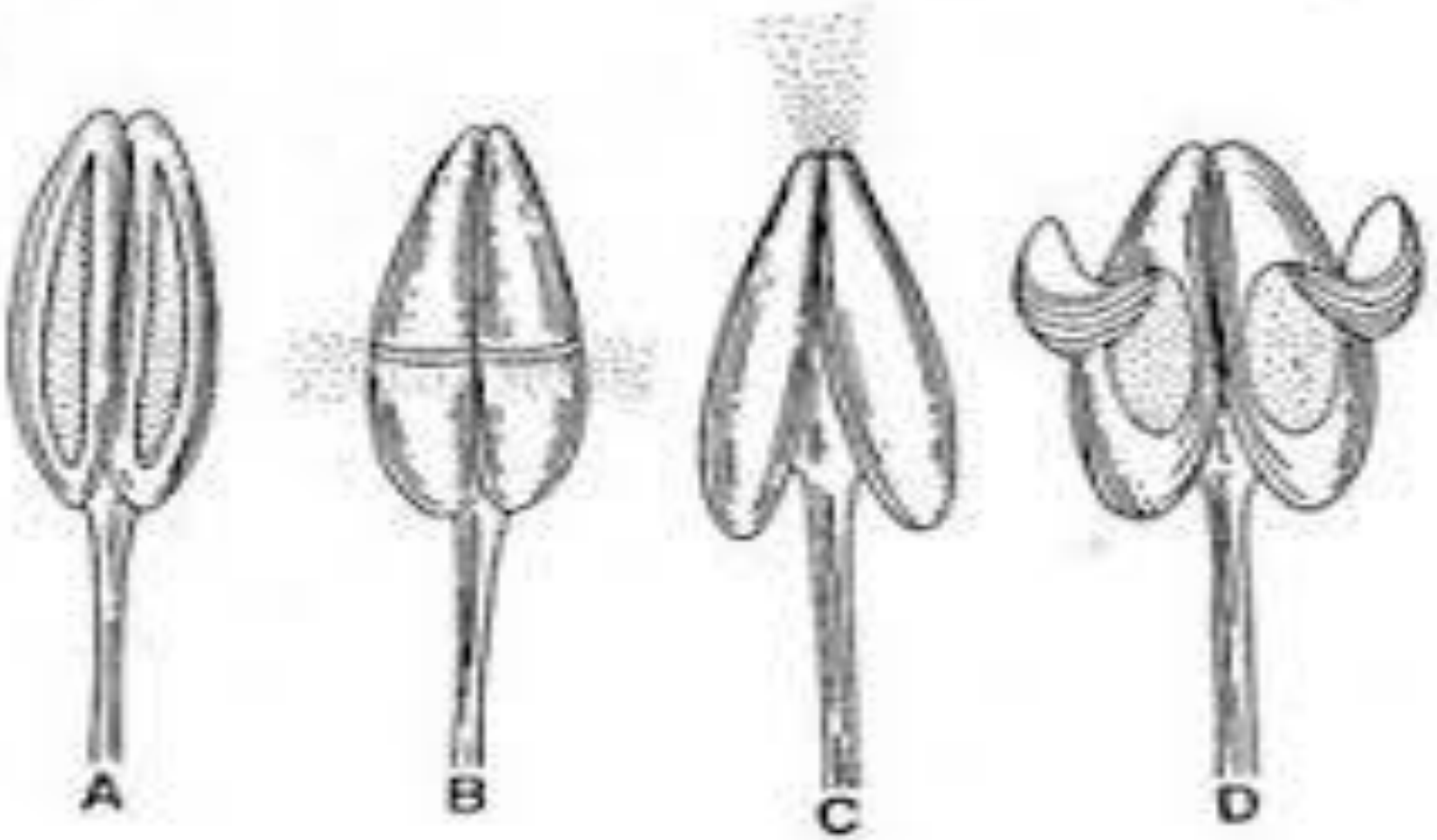
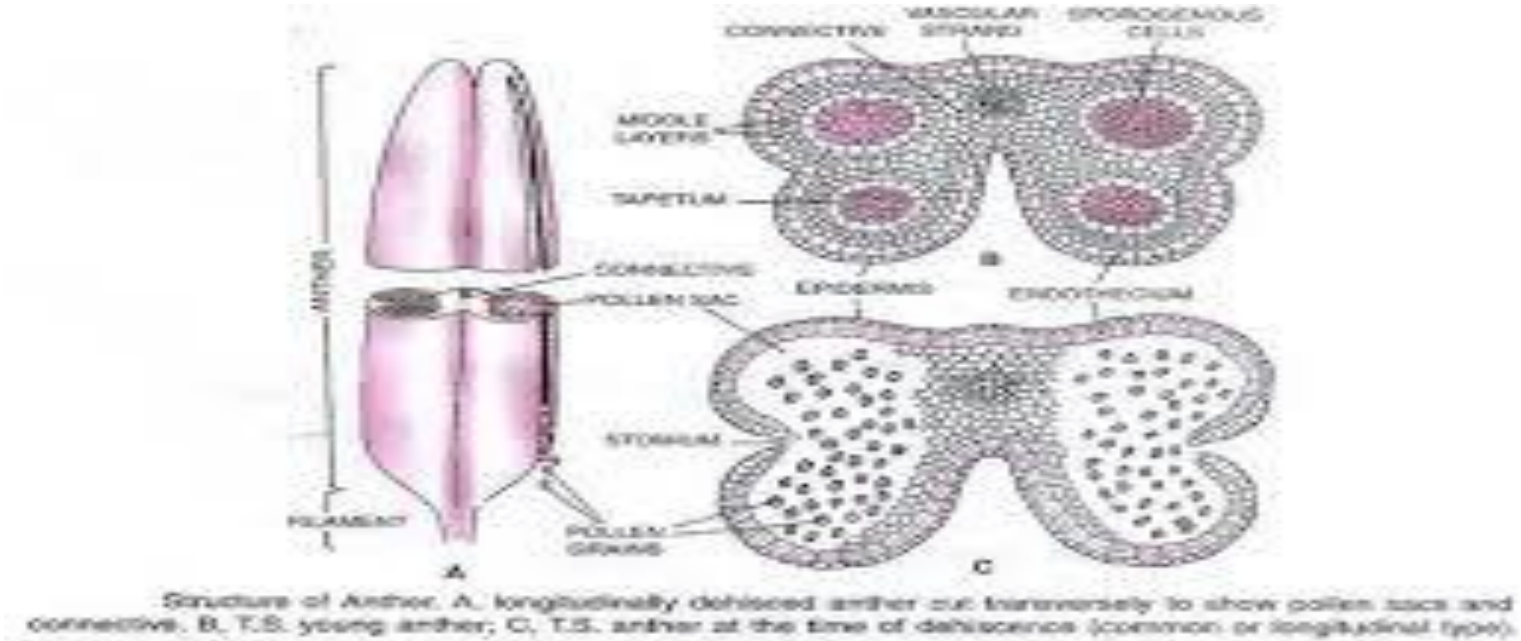


Fig. 34.62. Various types of dehiscence of anther. A, longitudinal slit; B, transverse slit; C, apical pore (porous); D, valvular.

MICROSPOROGENESIS AND MICROGAGAMETOGENESIS

SANCHALI KUNDU



Structure of Anther. A, longitudinally dehisced anther cut transversely to show pollen sacs and connective. B, T.S. young anther; C, T.S. anther at the time of dehiscence (common or longitudinal type).

MICROSPOROGENESIS

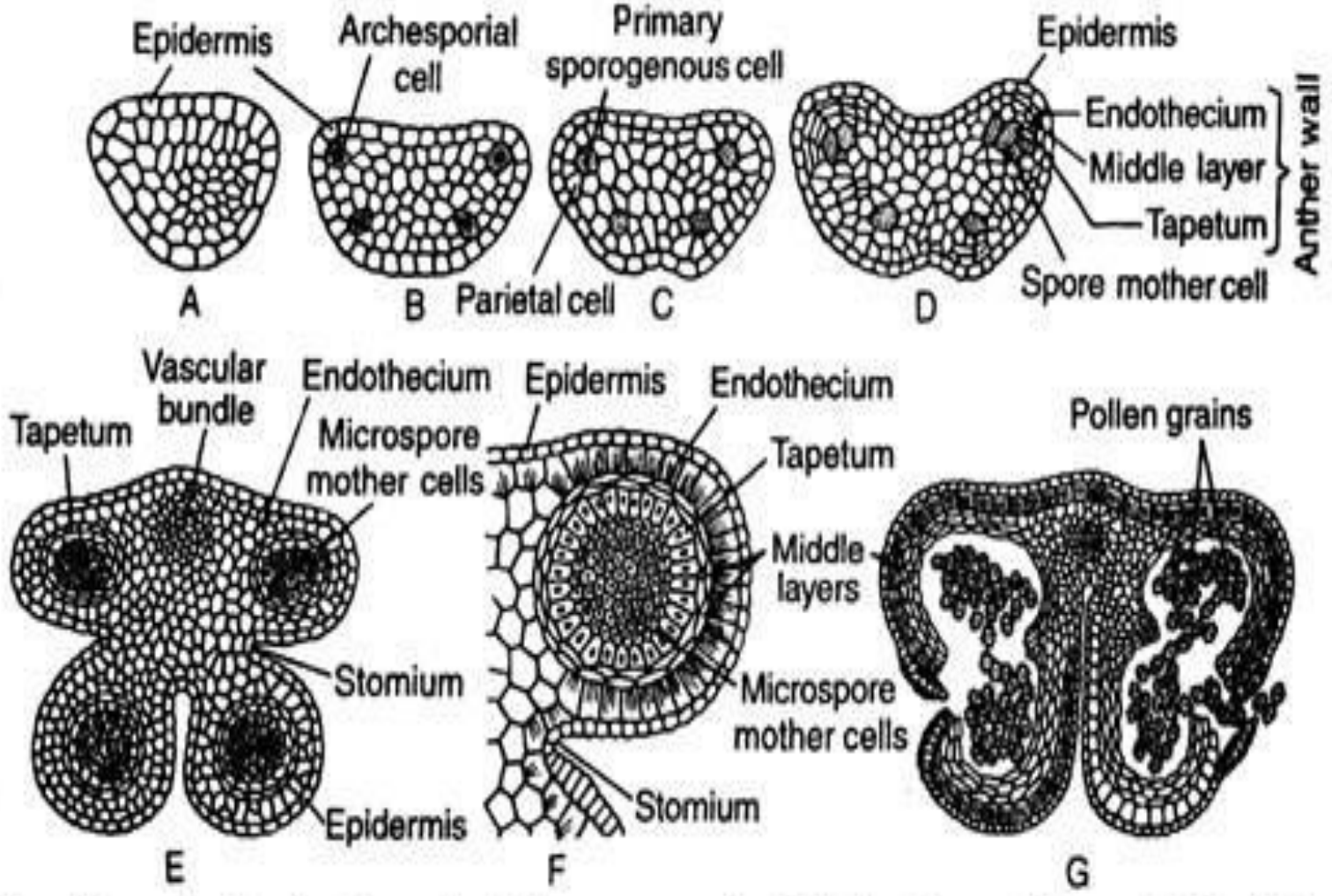
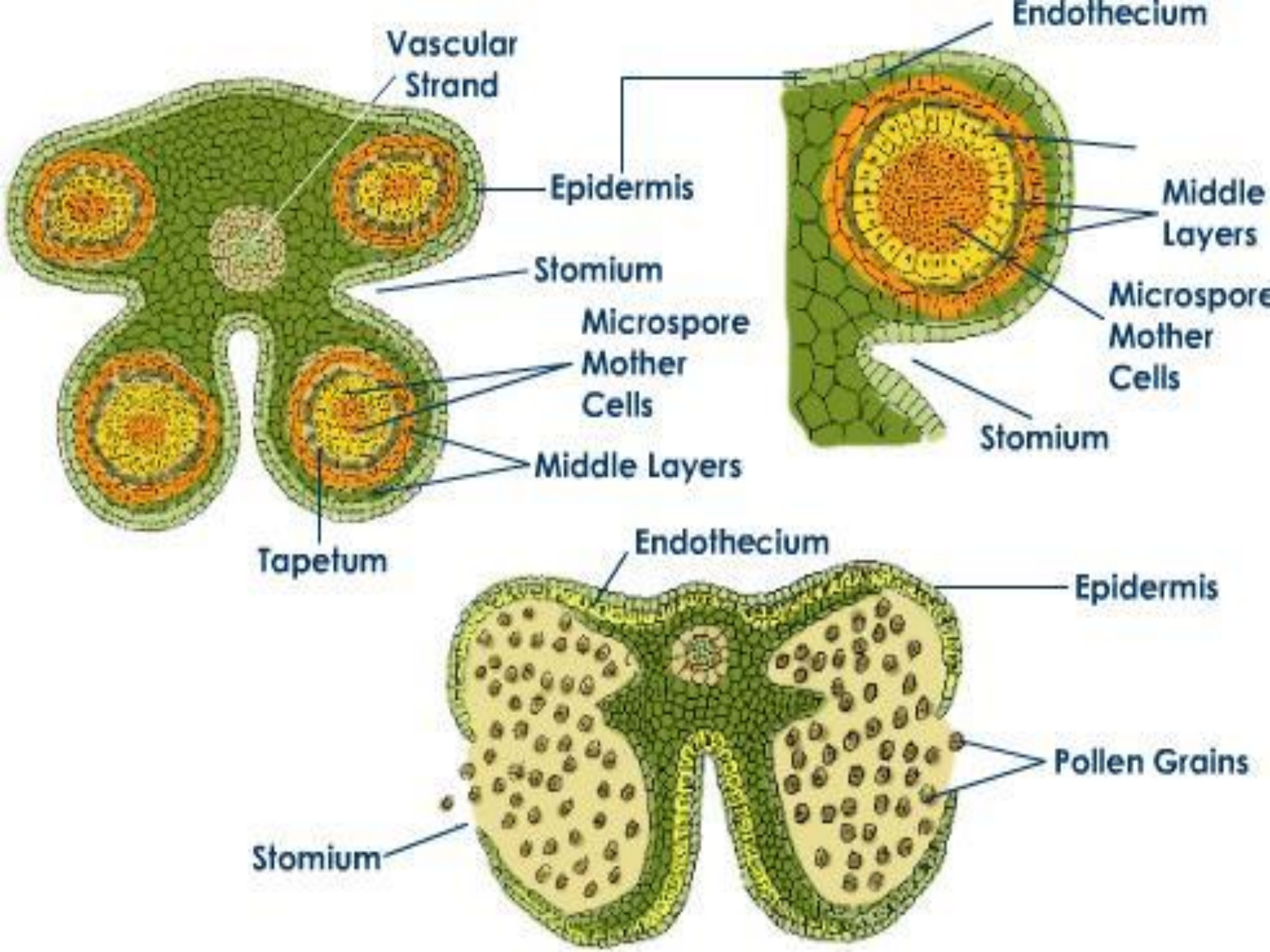
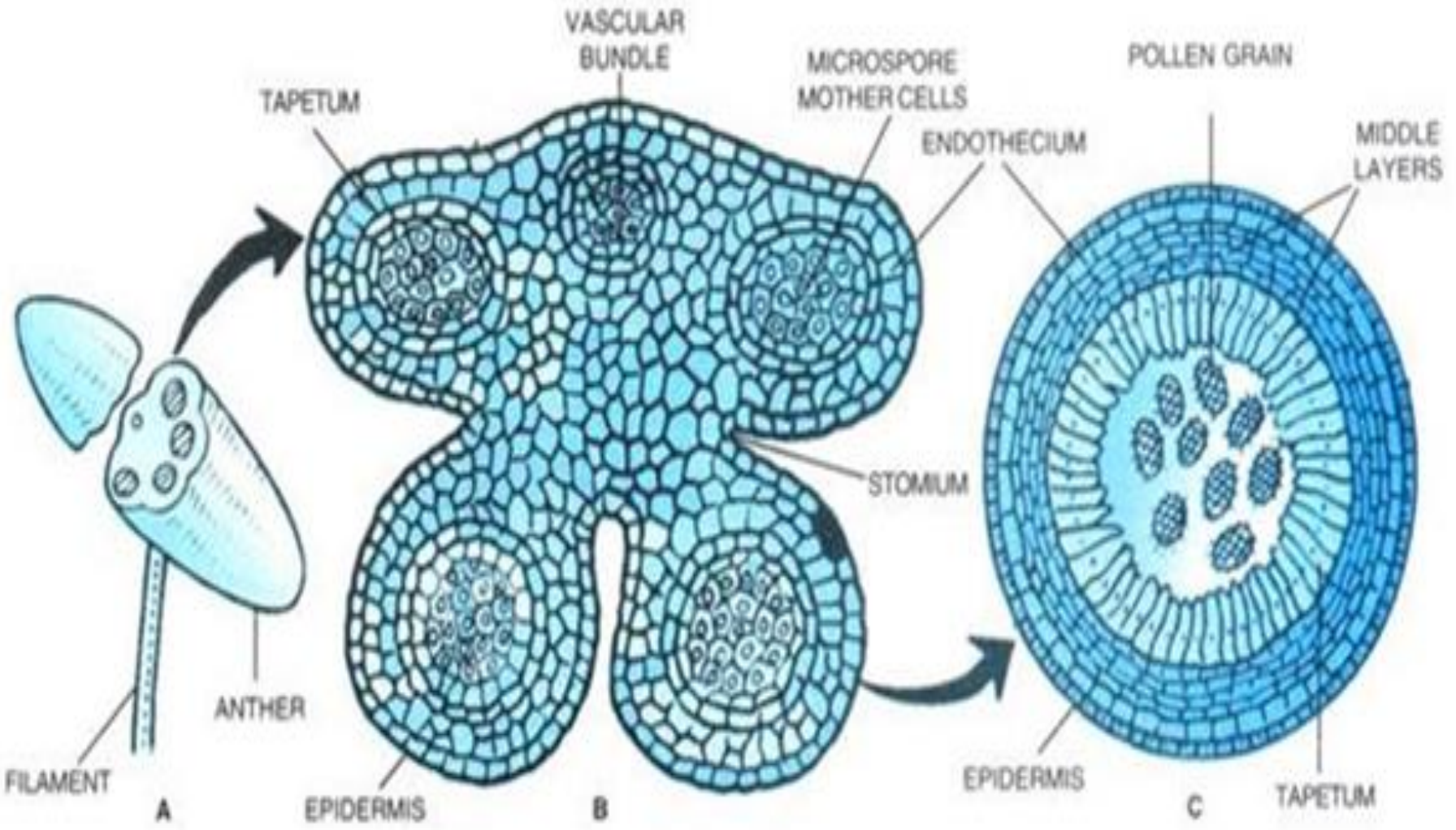


Fig. 3.1 : Stages of anther development and microsporogenesis : A–D. Developmental stages, E. T.S. of developing anther, F. Enlarged microsporangia with wall, and G. T.S. of mature anther showing liberation of pollen grains


Vascular Strand
Epidermis
Stomium
Microspore Mother Cells
Middle Layers
Tapetum
Endothecium
Middle Layers
Microspore Mother Cells
Stomium
Endothecium
Epidermis
Pollen Grains
Stomium



T.S. anther, showing stomium and pollen grains.

MICROGAMETOGENESIS

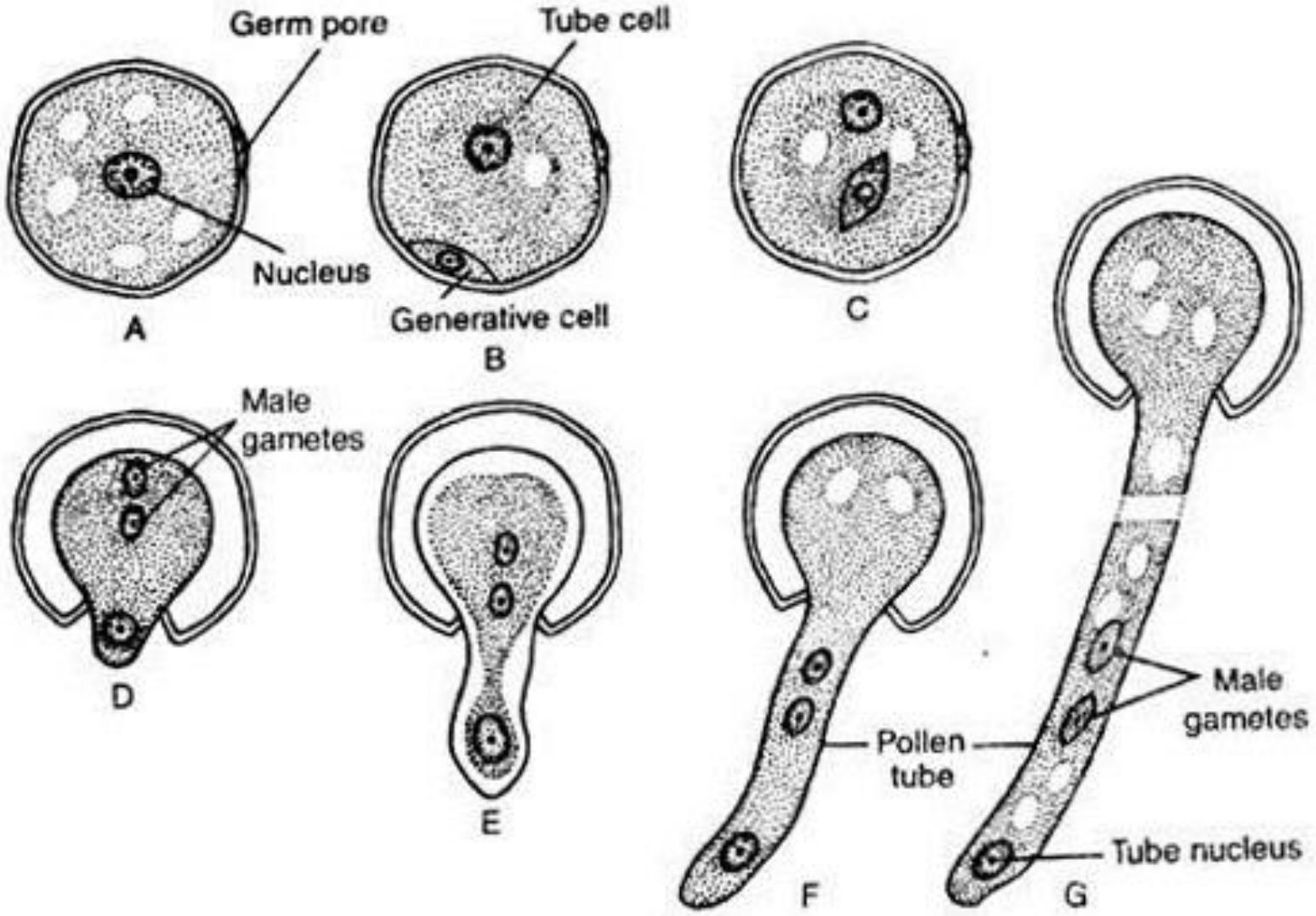


Fig. 3.5 : A-G. Germination of the pollen grain and development of the male gametes

MEGASPOROGENESIS AND MEGAGAMETOGENESIS

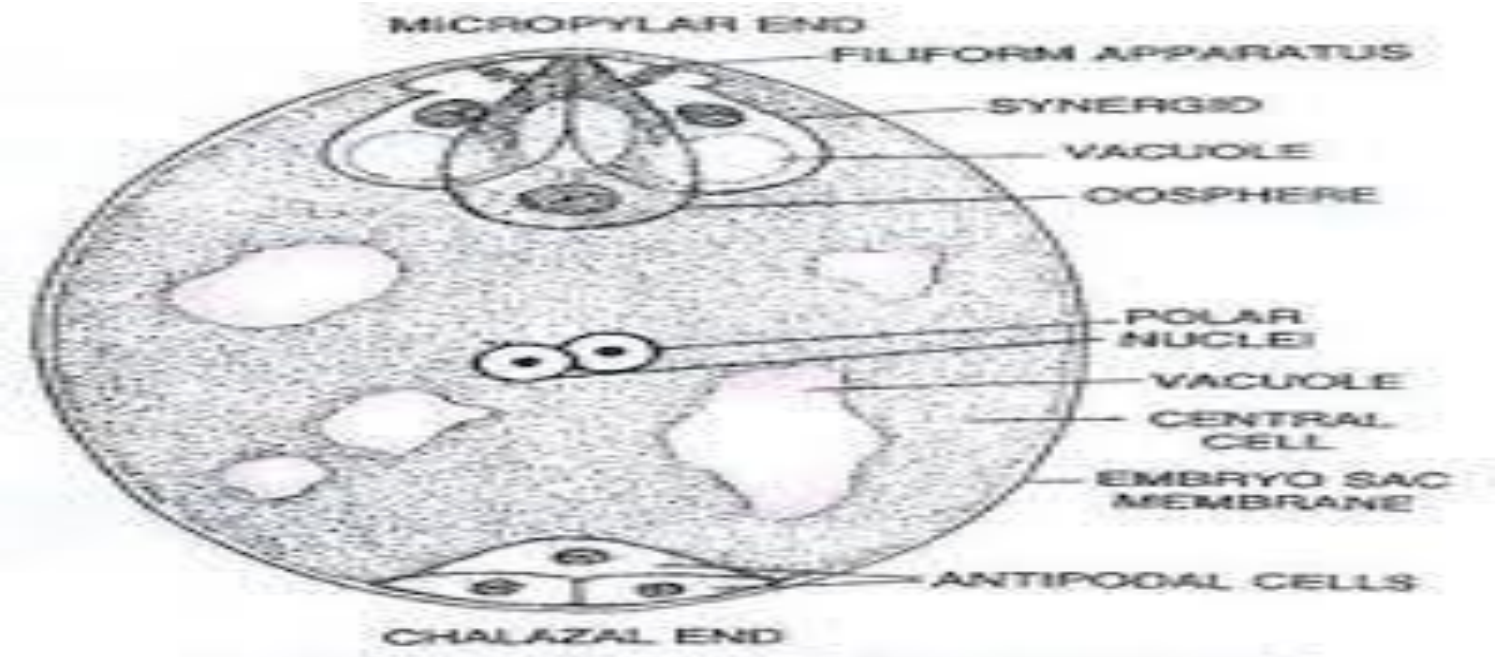
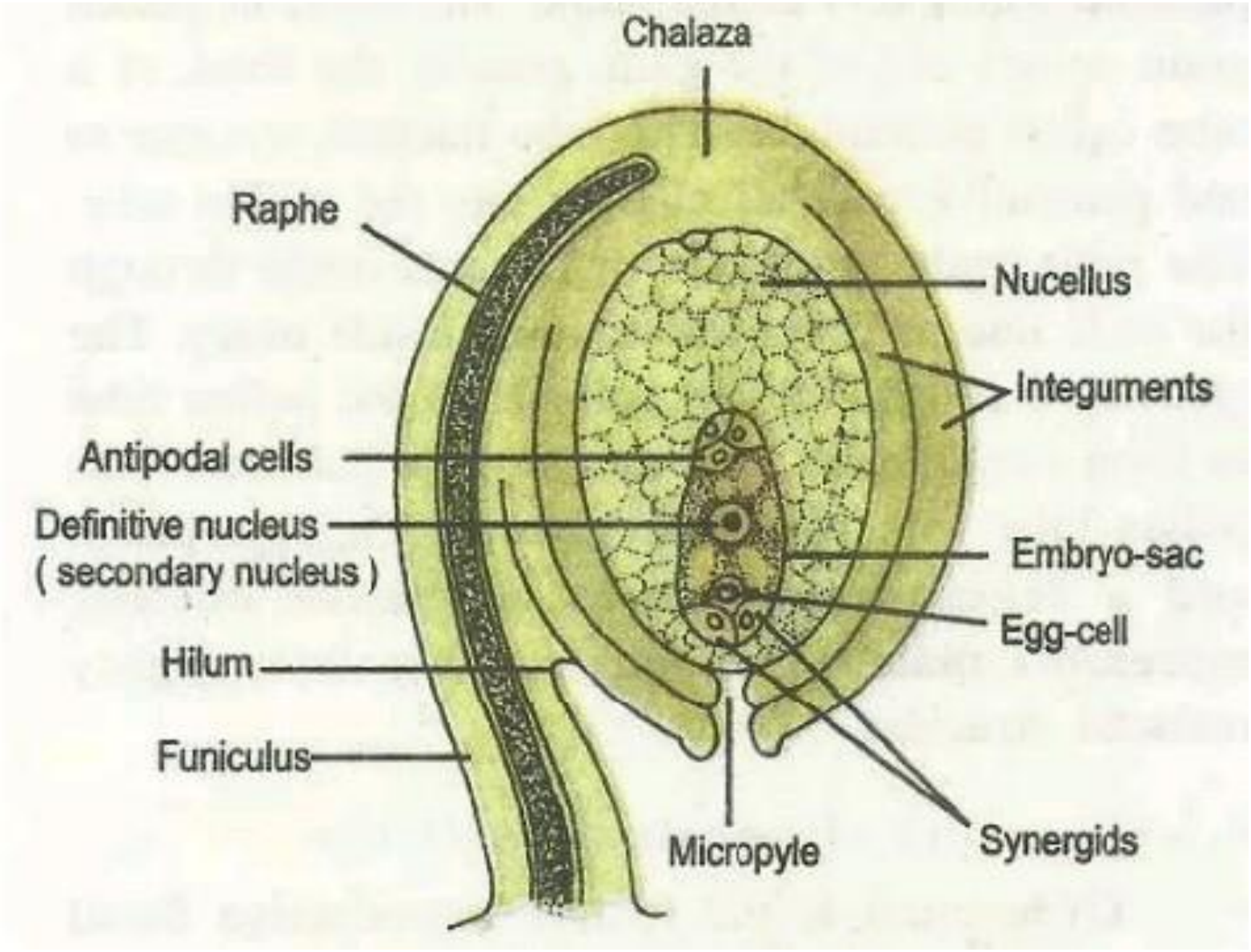
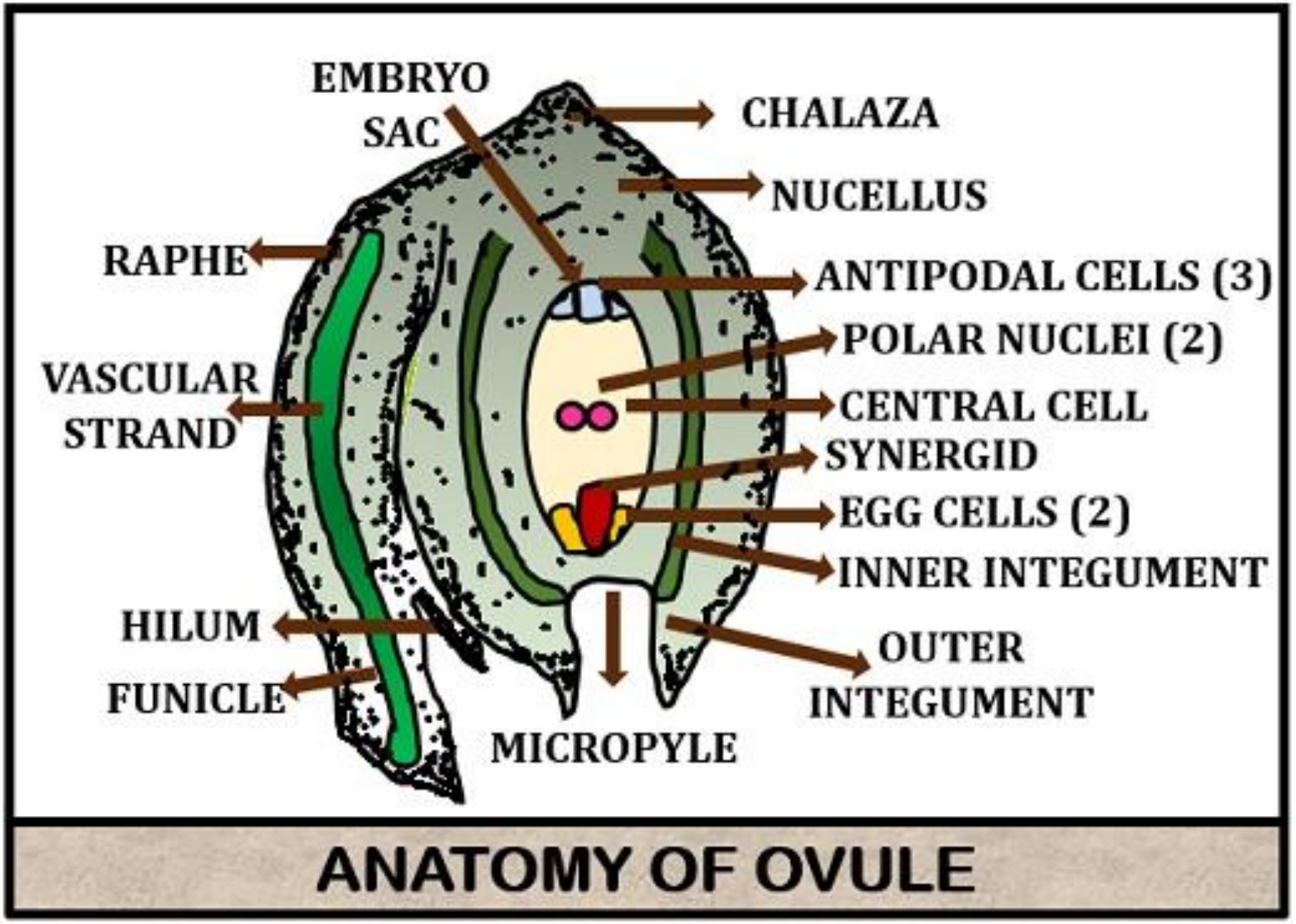


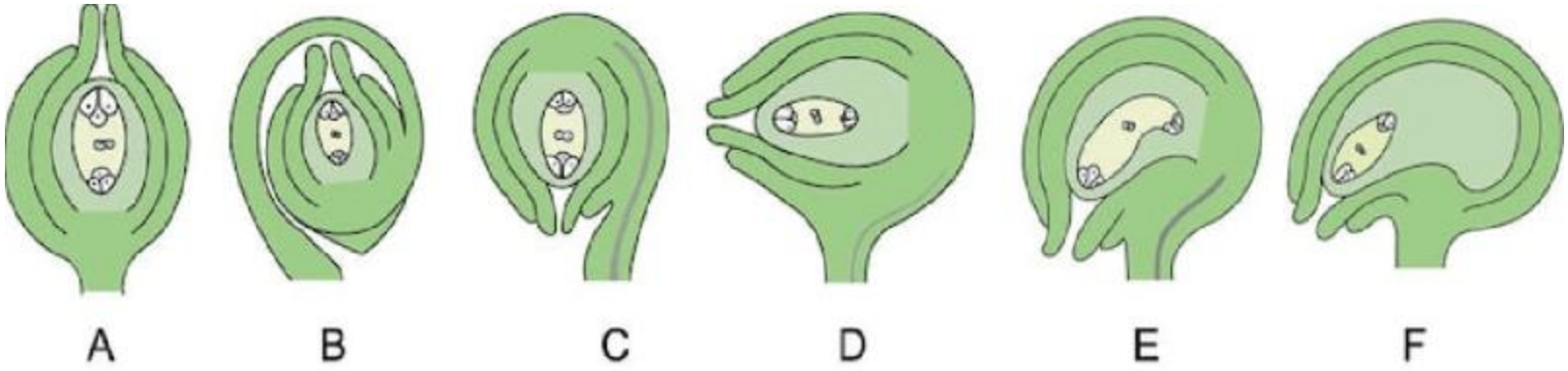
Fig. 2.15. Normal or *Polygonum* type of embryo sac.

STRUCTURE OF OVULE

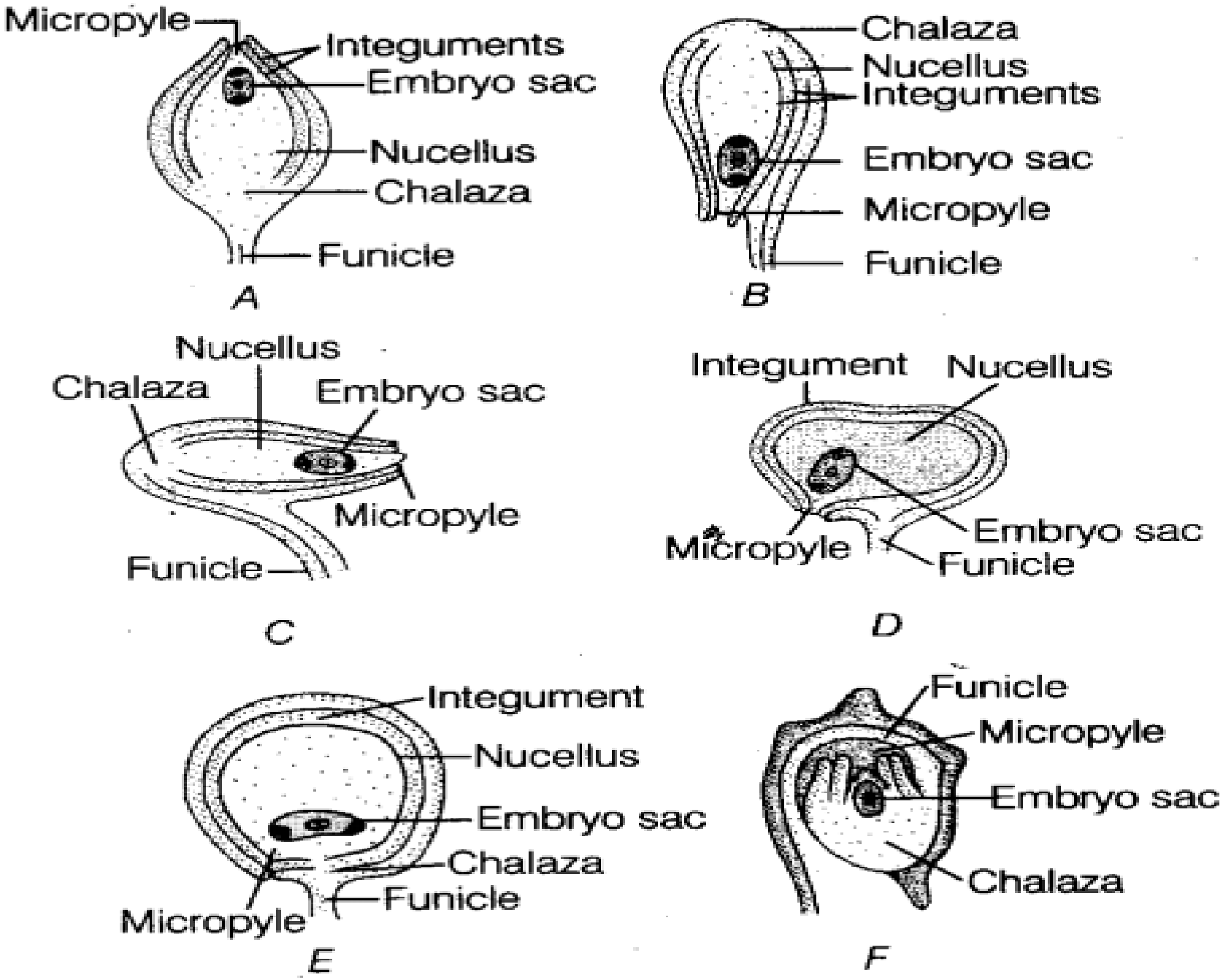

Chalaza
Raphe
Nucellus
Integuments
Antipodal cells
Definitive nucleus
(secondary nucleus)
Embryo-sac
Egg-cell
Hilum
Funiculus
Micropyle
Synergids

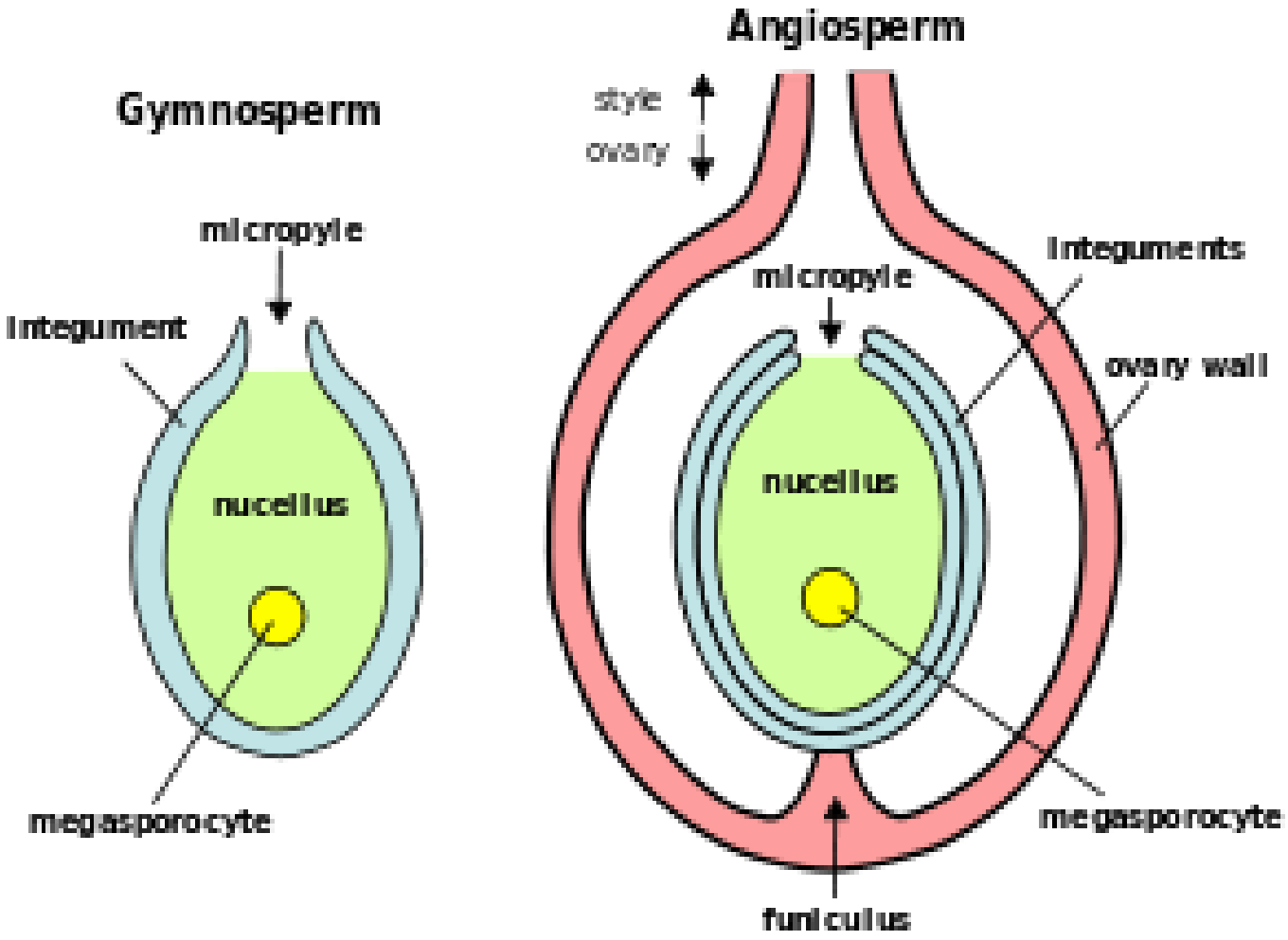

EMBRYO SAC
CHALAZA
NUCELLUS
RAPHE
ANTIPODAL CELLS (3)
POLAR NUCLEI (2)
VASCULAR STRAND
CENTRAL CELL
SYNERGID
EGG CELLS (2)
INNER INTEGUMENT
HILUM
OUTER INTEGUMENT
FUNICLE
MICROPYLE
ANATOMY OF OVULE

TYPES OF OVULES



Types of ovule. A,Orthotropous ; B,Circinotropous ;C,Anatropous ;
D,Hemianatropous; E,Amphitropous; F,Campilotropous


Micropyle
Integuments
Embryo sac
Nucellus
Chalaza
Funicle
A
Chalaza
Nucellus
Integuments
Embryo sac
Micropyle
Funicle
B
Nucellus
Chalaza
Embryo sac
Micropyle
Funicle
C
Integument
Nucellus
Micropyle
Embryo sac
Funicle
D
Integument
Nucellus
Embryo sac
Chalaza
Funicle
Micropyle
E
Funicle
Micropyle
Embryo sac
Chalaza
F


Gymnosperm
micropyle
integument
nucellus
megasporocyte
Angiosperm
style
ovary
micropyle
integuments
ovary wall
nucellus
megasporocyte
funiculus

MEGASPOROGENESIS

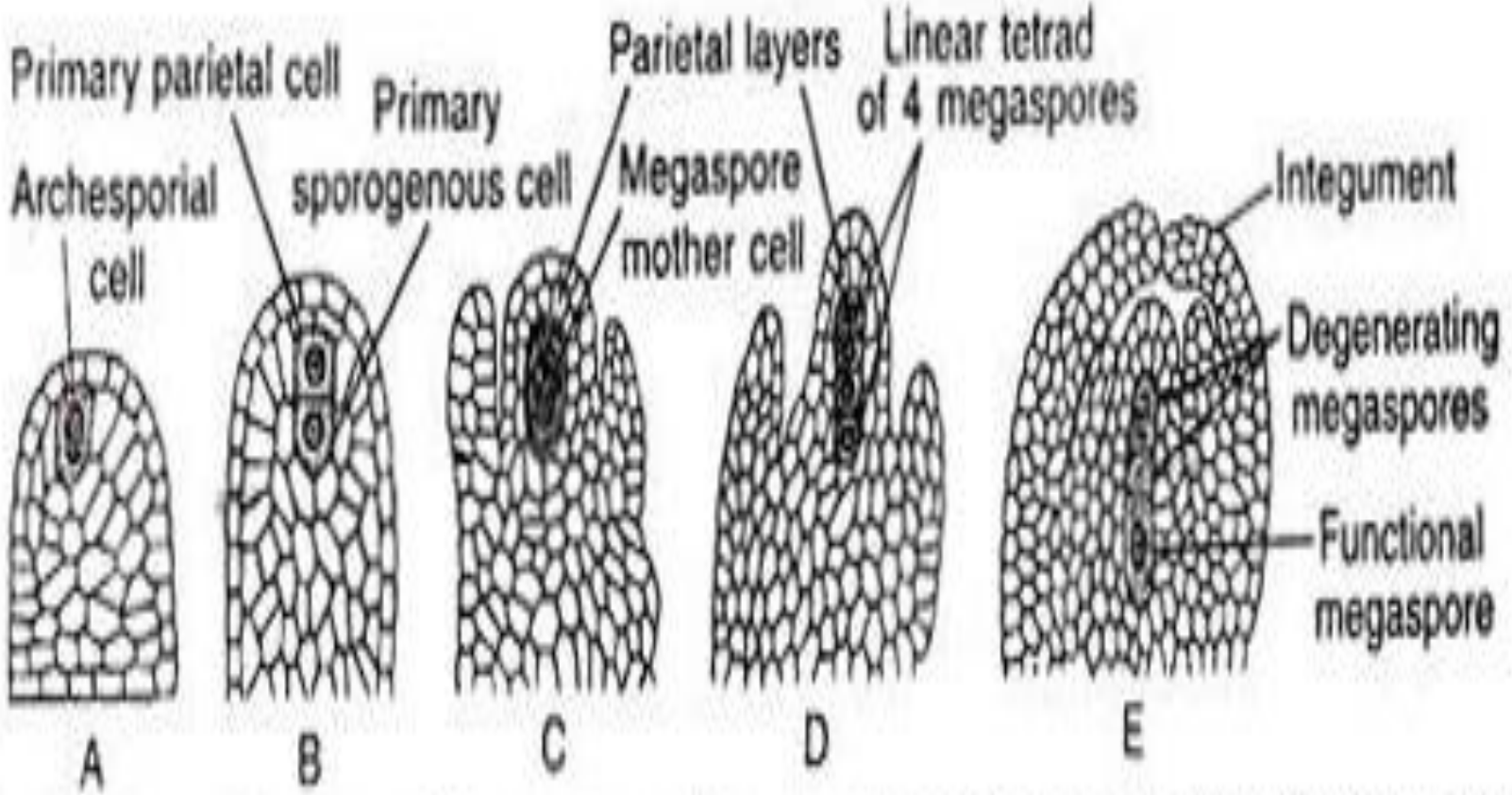
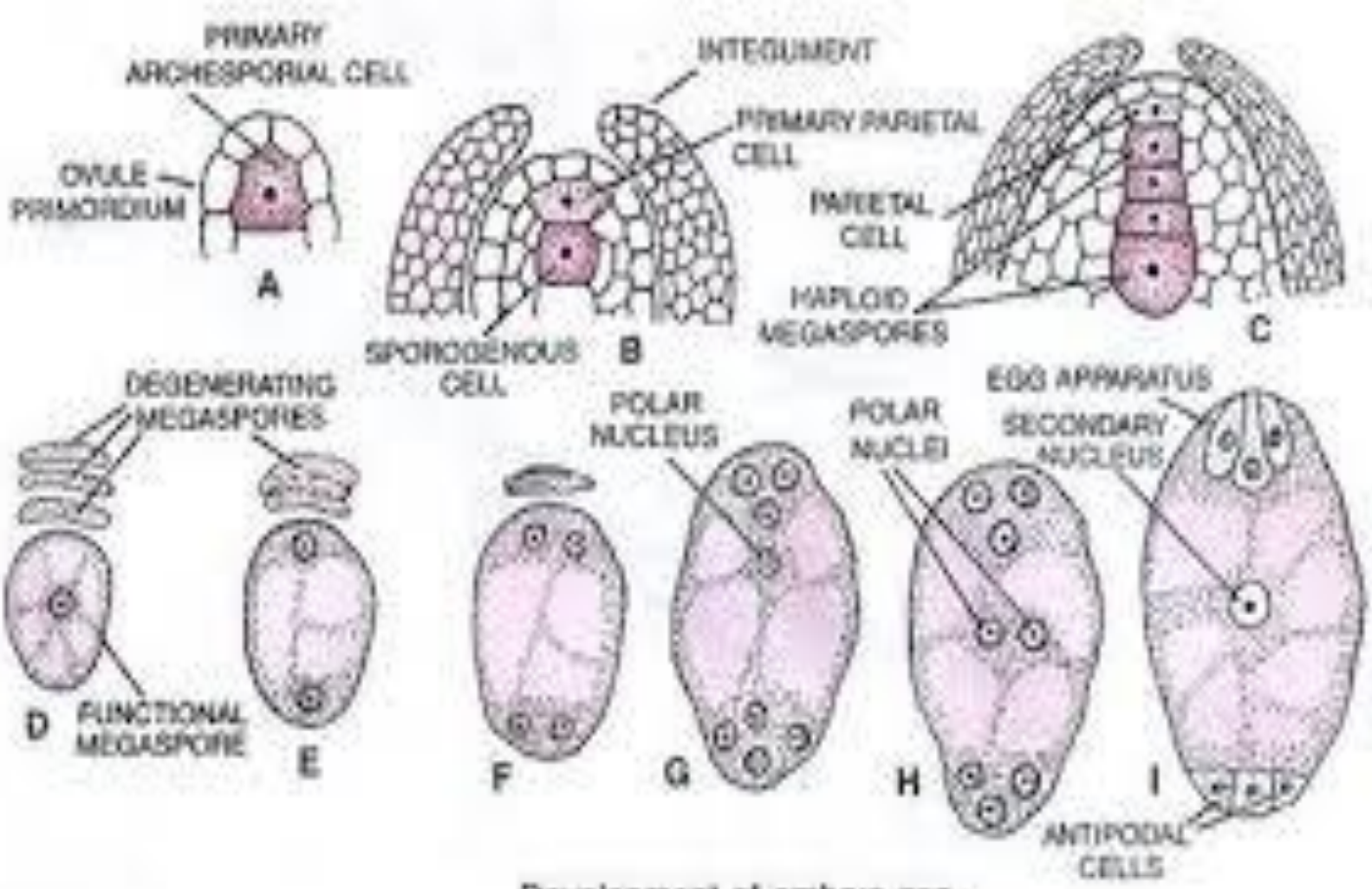


Fig. 3.6 : A-E. Stages of development of megaspore mother cell and megasporogenesis (development of megaspore)



Development of embryo sac.

MEGAGAMETOGENESIS

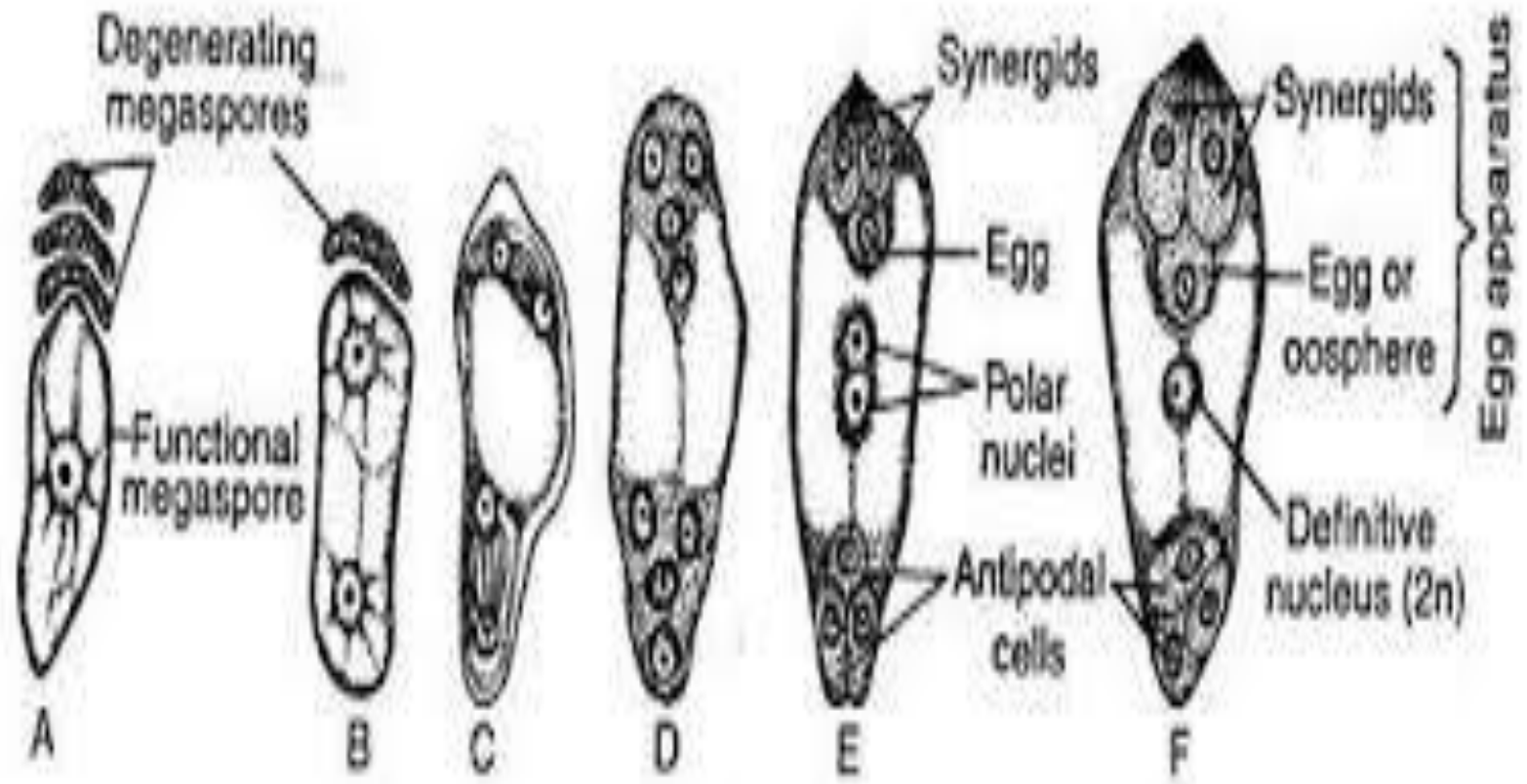
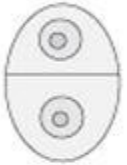
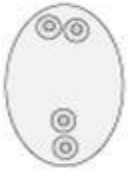
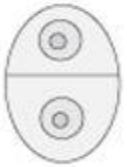
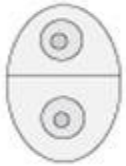
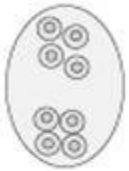
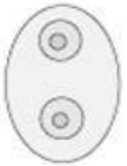
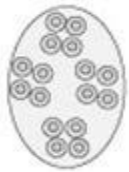
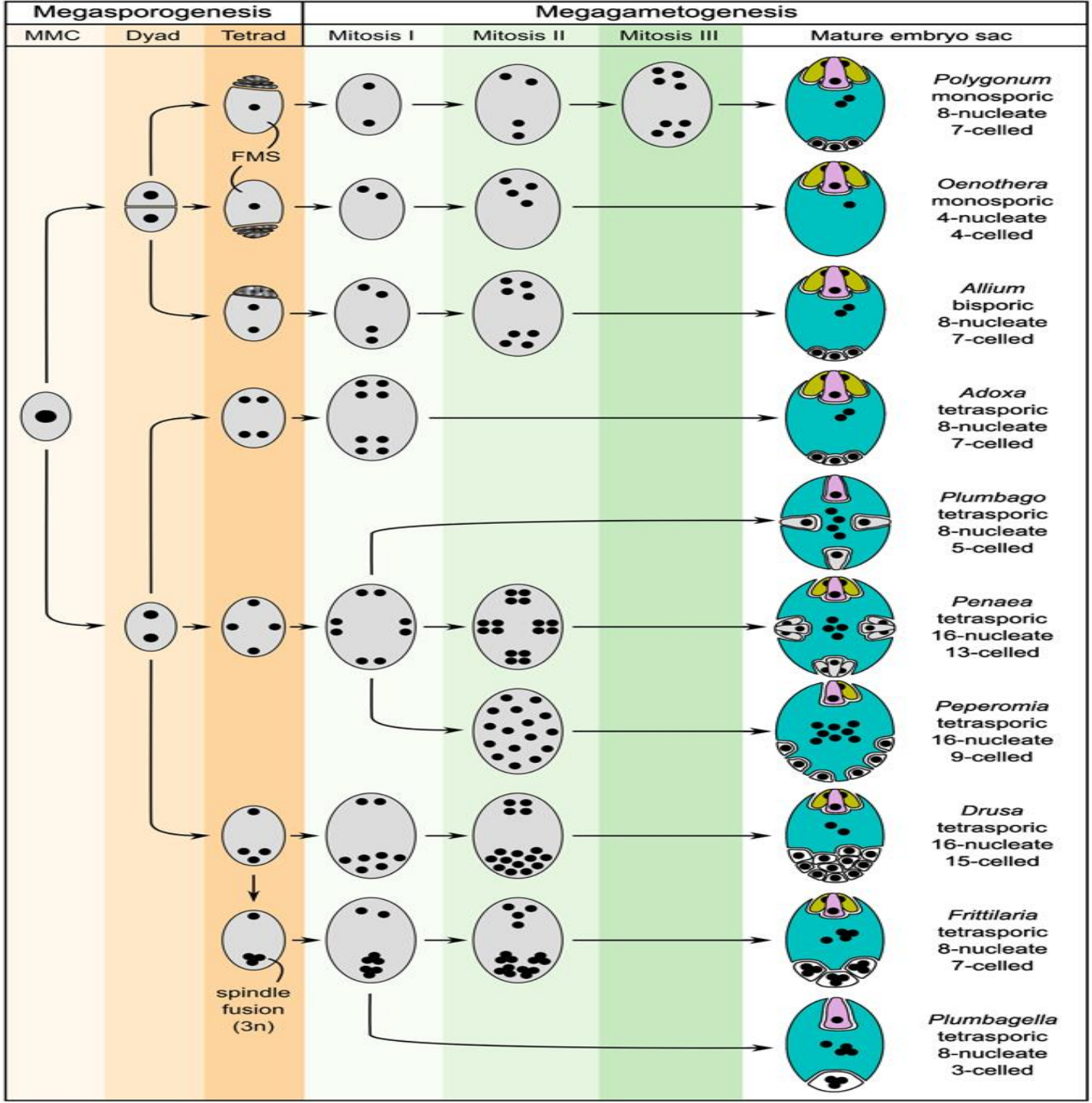


Fig. 3.7 : A-F. Stages of development of female gametophyte

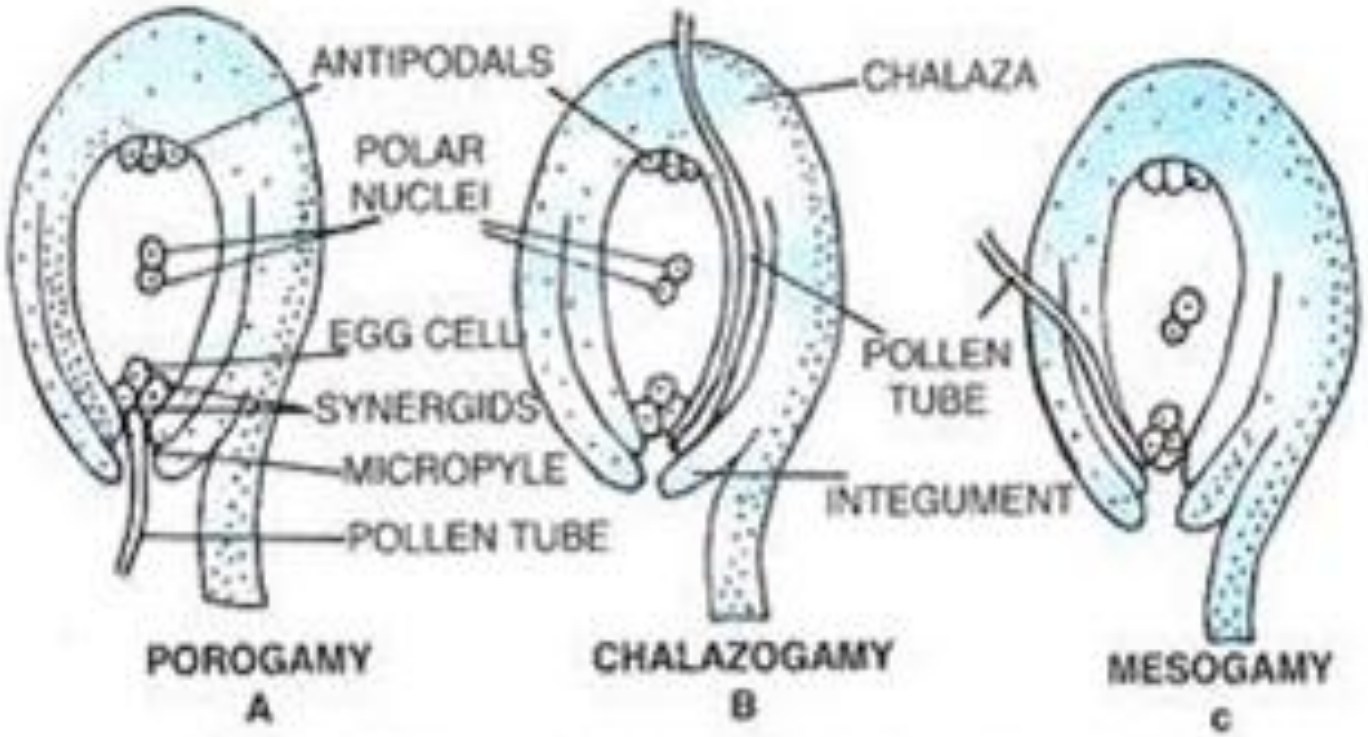
VARIOUS TYPES OF EMBRYO SAC DEVELOPMENT

Megasporogenesis & Megagametogenesis

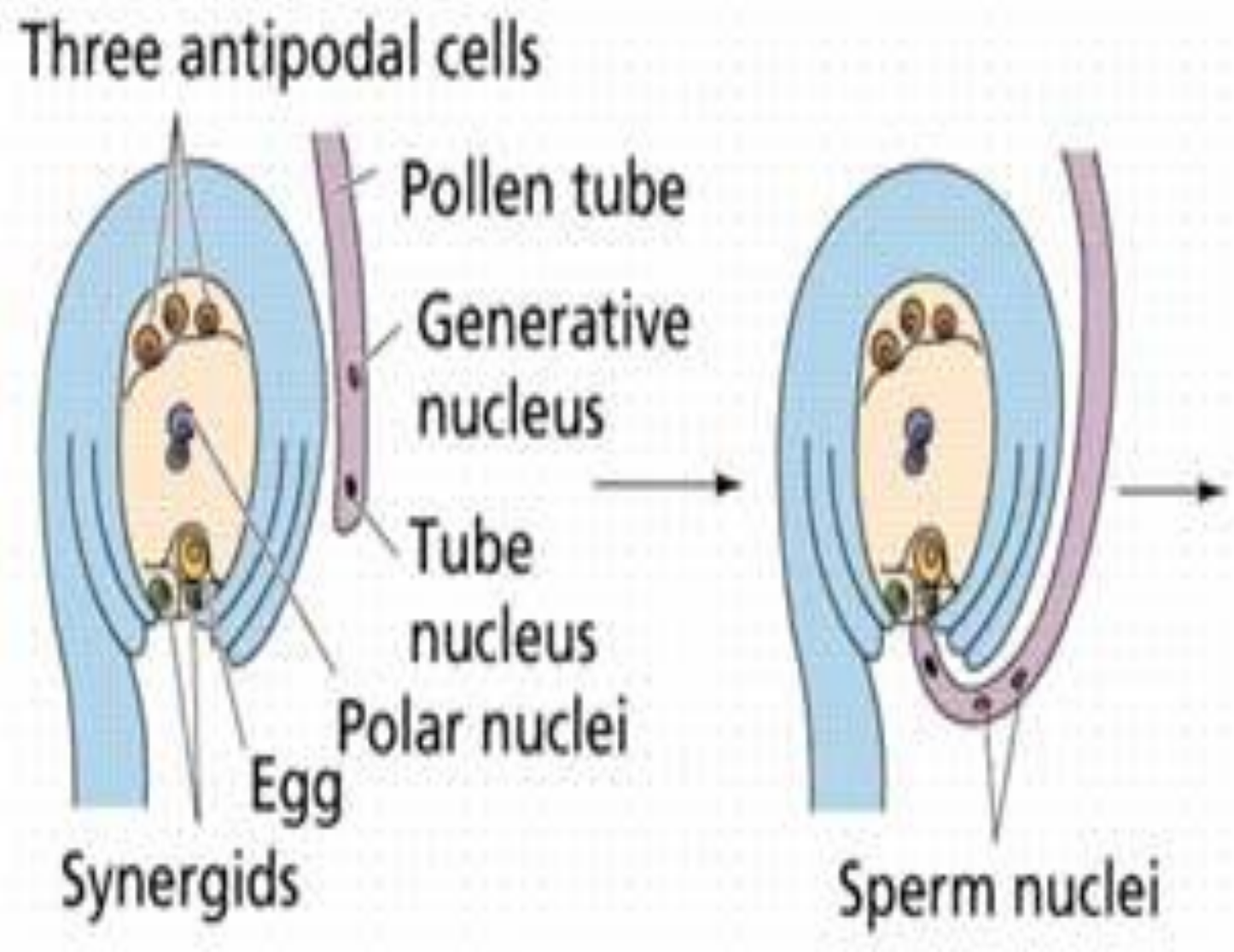
Female Gametophyte Type	Megasporogenesis			Megagametogenesis			
	Mega-sporocyte	Meiosis I	Meiosis II	Mitosis I	Mitosis II	Mitosis III	Mature female gametophyte
Monosporic 8-nucleate *Polygonum* type							
Monosporic 4-nucleate *Oenothera* type							
Bisporic 8-nucleate *Allium* type							
Tetrasporic 16-nucleate *Peperomia* type							
Tetrasporic 16-nucleate *Penaea* type							

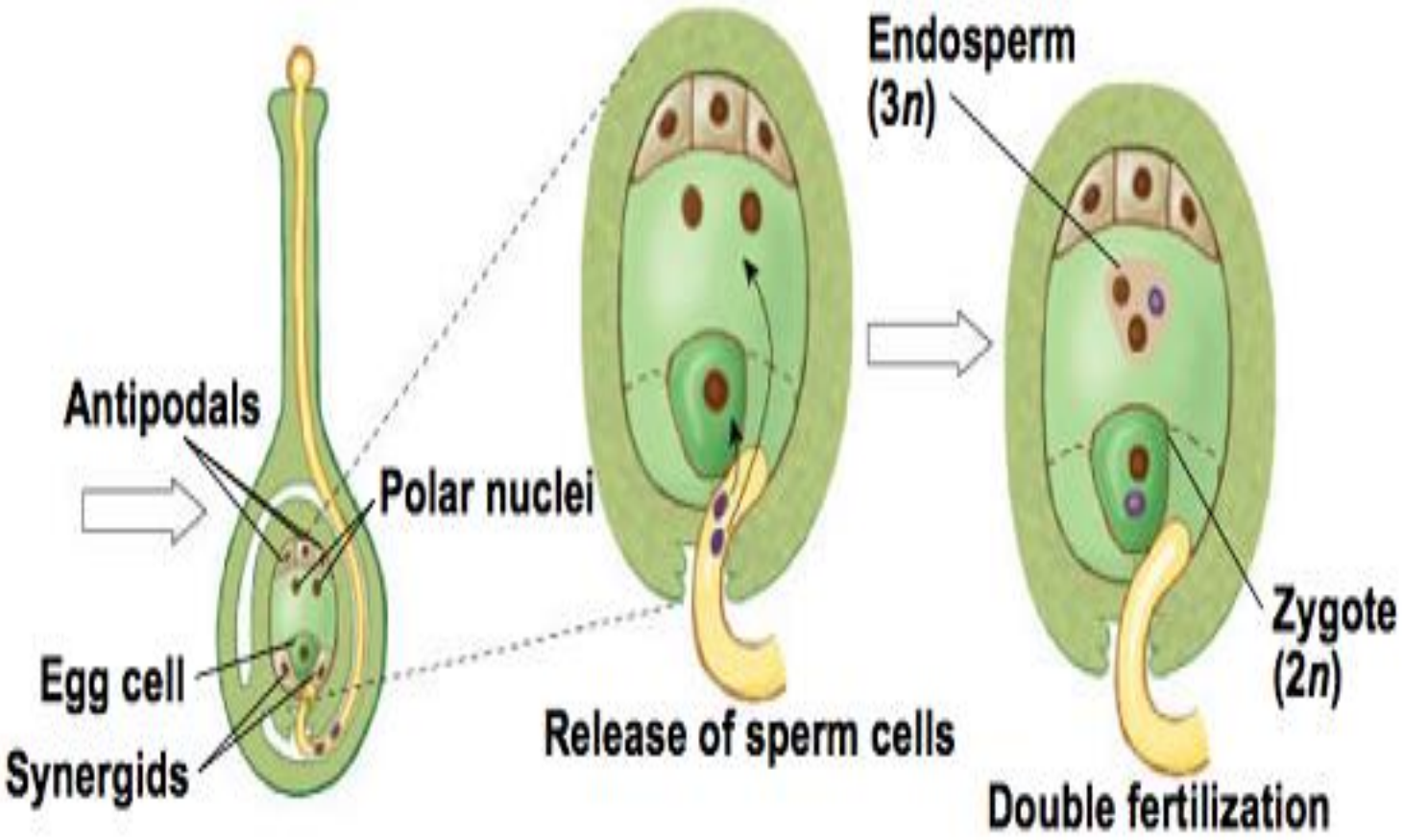

Megasporogenesis
Megagametogenesis
MMC
Dyad
Tetrad
Mitosis I
Mitosis II
Mitosis III
Mature embryo sac
FMS
spindle fusion (3n)
Polygonum monosporic 8-nucleate 7-celled
Oenothera monosporic 4-nucleate 4-celled
Allium bisporic 8-nucleate 7-celled
Adoxa tetrasporic 8-nucleate 7-celled
Plumbago tetrasporic 8-nucleate 5-celled
Penaea tetrasporic 16-nucleate 13-celled
Peperomia tetrasporic 16-nucleate 9-celled
Drusa tetrasporic 16-nucleate 15-celled
Frittilaria tetrasporic 8-nucleate 7-celled
Plumbagella tetrasporic 8-nucleate 3-celled

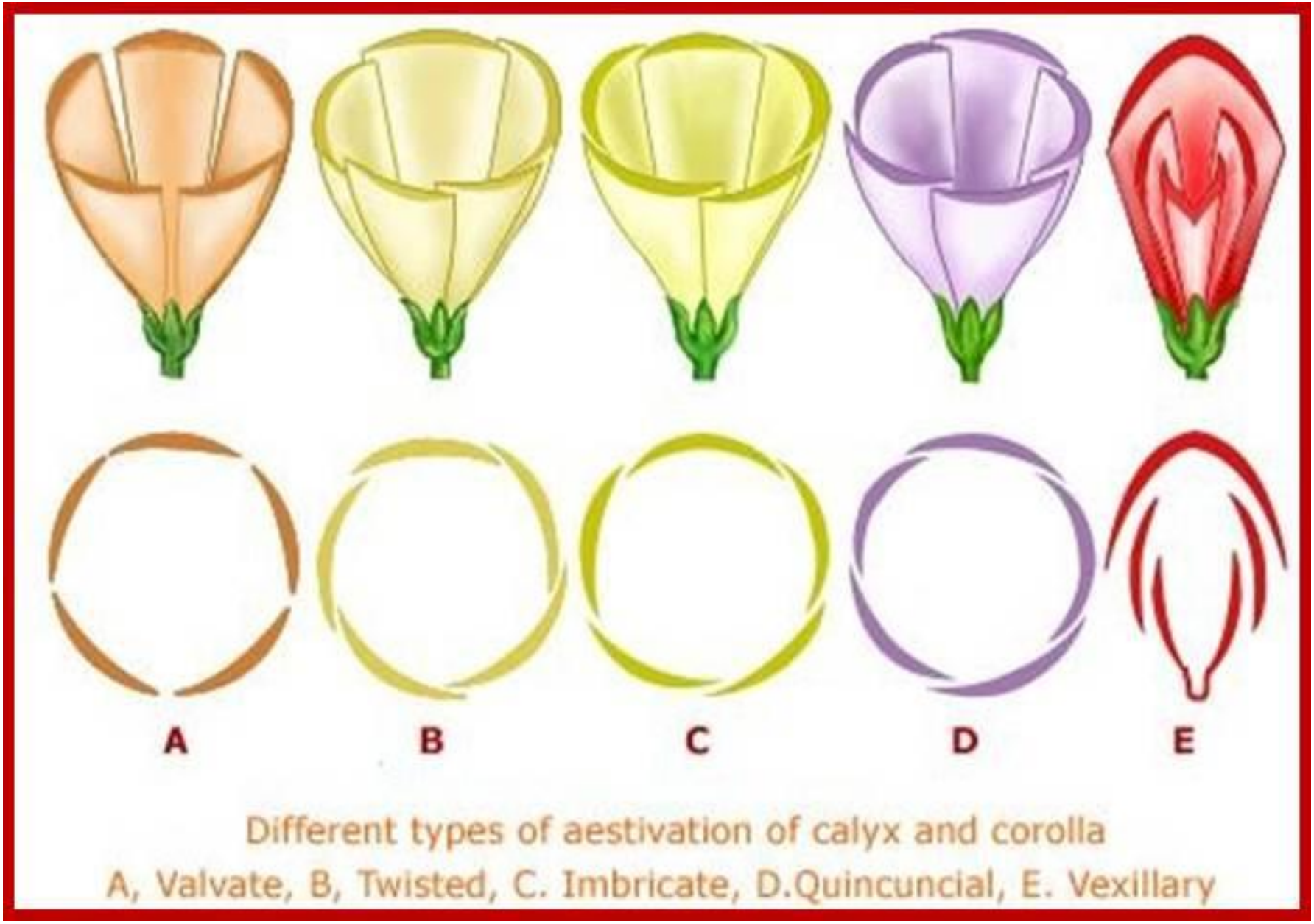
FERTILIZATION



Entry of pollen tube into the ovule :
A. Porogamy; B. Chalazogamy; C. Mesogamy.


Three antipodal cells
Pollen tube
Generative nucleus
Tube nucleus
Polar nuclei
Egg
Synergids
Sperm nuclei


Antipodals
Polar nuclei
Egg cell
Synergids
Release of sperm cells
Endosperm
(3n)
Zygote
(2n)
Double fertilization



Different types of aestivation of calyx and corolla
A, Valvate, B, Twisted, C. Imbricate, D.Quincuncial, E. Vexillary

Acknowledgement

- I am grateful to Professor Srirupa Mukherjee, Principal of Panihati Mahavidyalaya for providing necessary facilities and advice and for preparation of this seminae lecture.

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THANK YOU