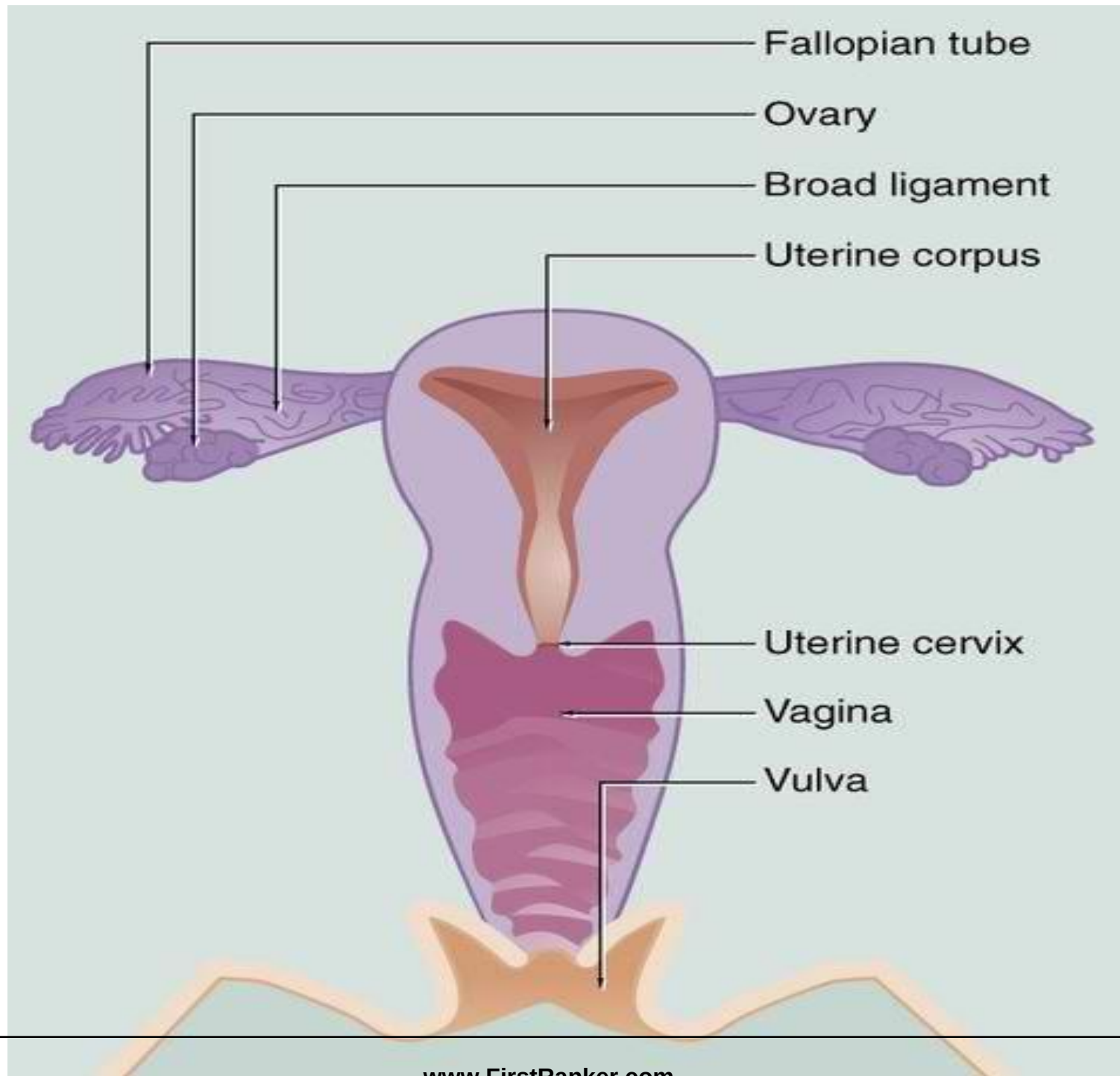


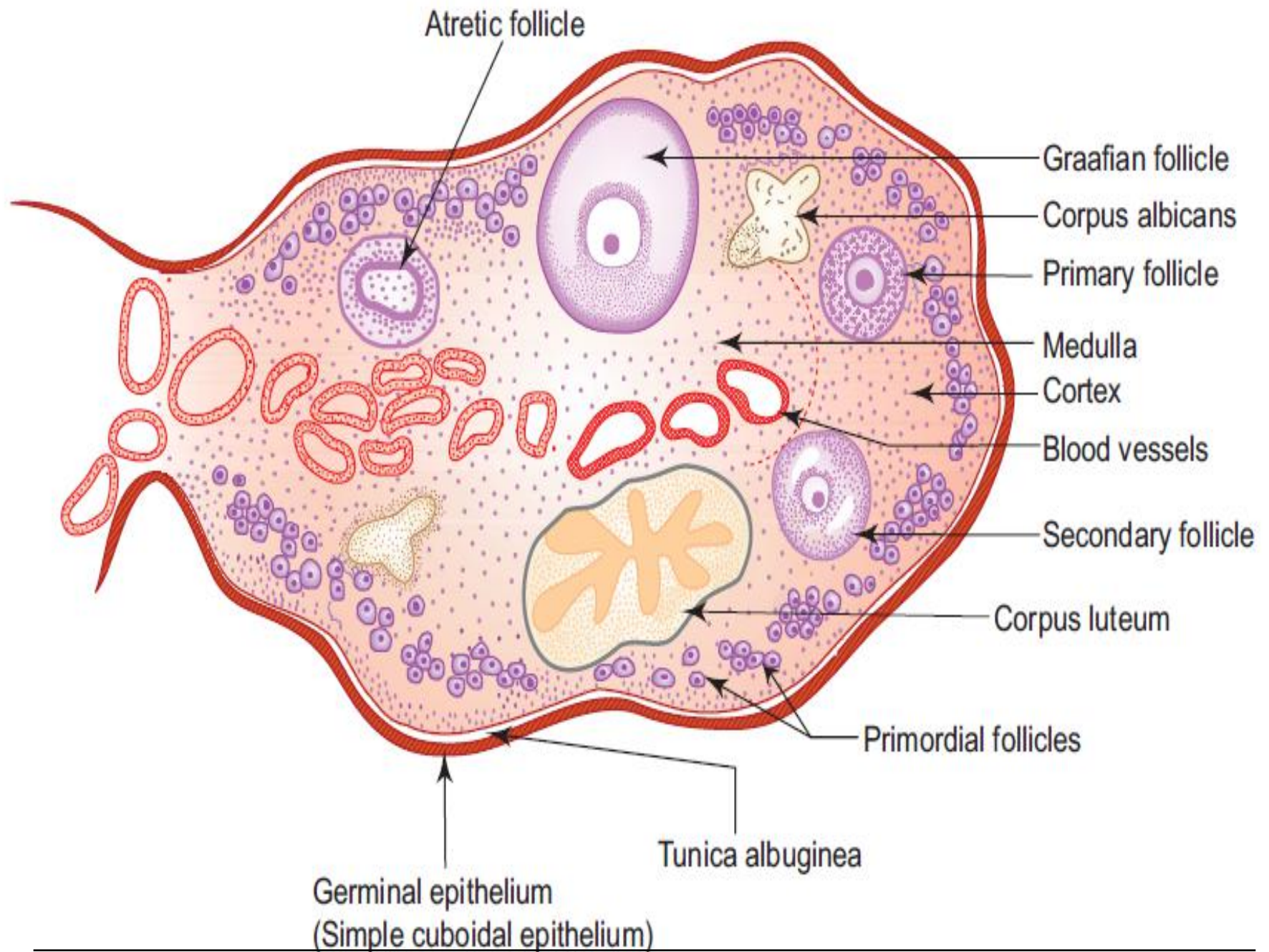
FEMALE REPRODUCTIVE SYSTEM



OVARY

- Female gonads that produce ova and hormones (oestrogen & progesterone).
- Shape—Almond shaped
- Length—3cm
- Width—1.5cm
- Thickness—1cm.

- Surface of ovary is covered by a layer of simple cuboidal epithelium called germinal epithelium.
- Germinal epithelium rests on dense connective tissue called tunica albuginea.
- Ovary:
 - Perpheral → cortex
 - Central → medulla



- *Cortex* →
- Occupies greater part of ovary.
- Contains ovarian follicles at different stages of maturation & degeneration.
- Also contain corpus luteum and corpus albicans.
- Follicles are embedded in cellular connective tissue stroma.

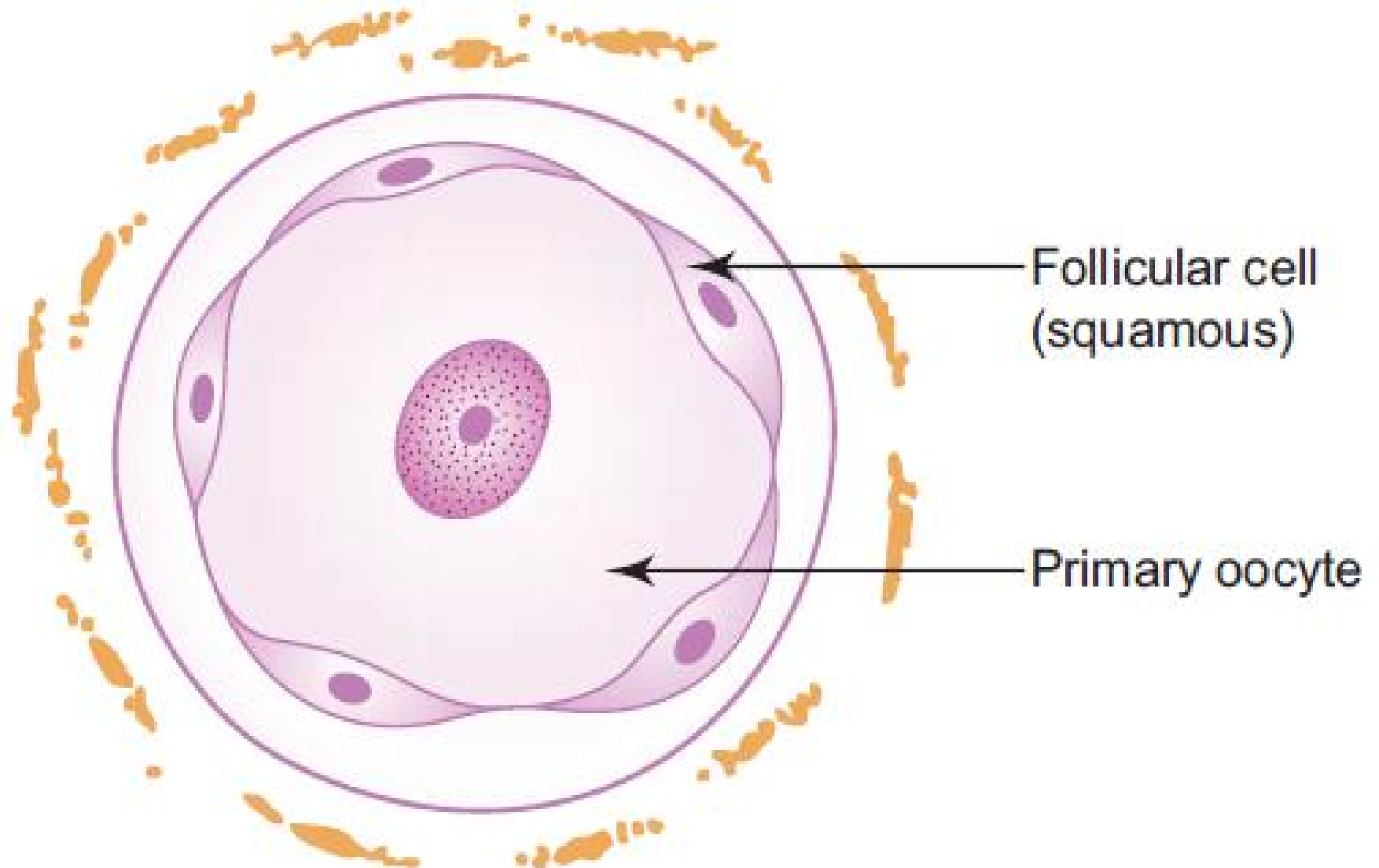
- *Medulla* →
- Made of loose fibroelastic connective tissue.
- Containing blood vessels, lymphatics and nerves.
- Hilus cells—source of androgen from ovary.

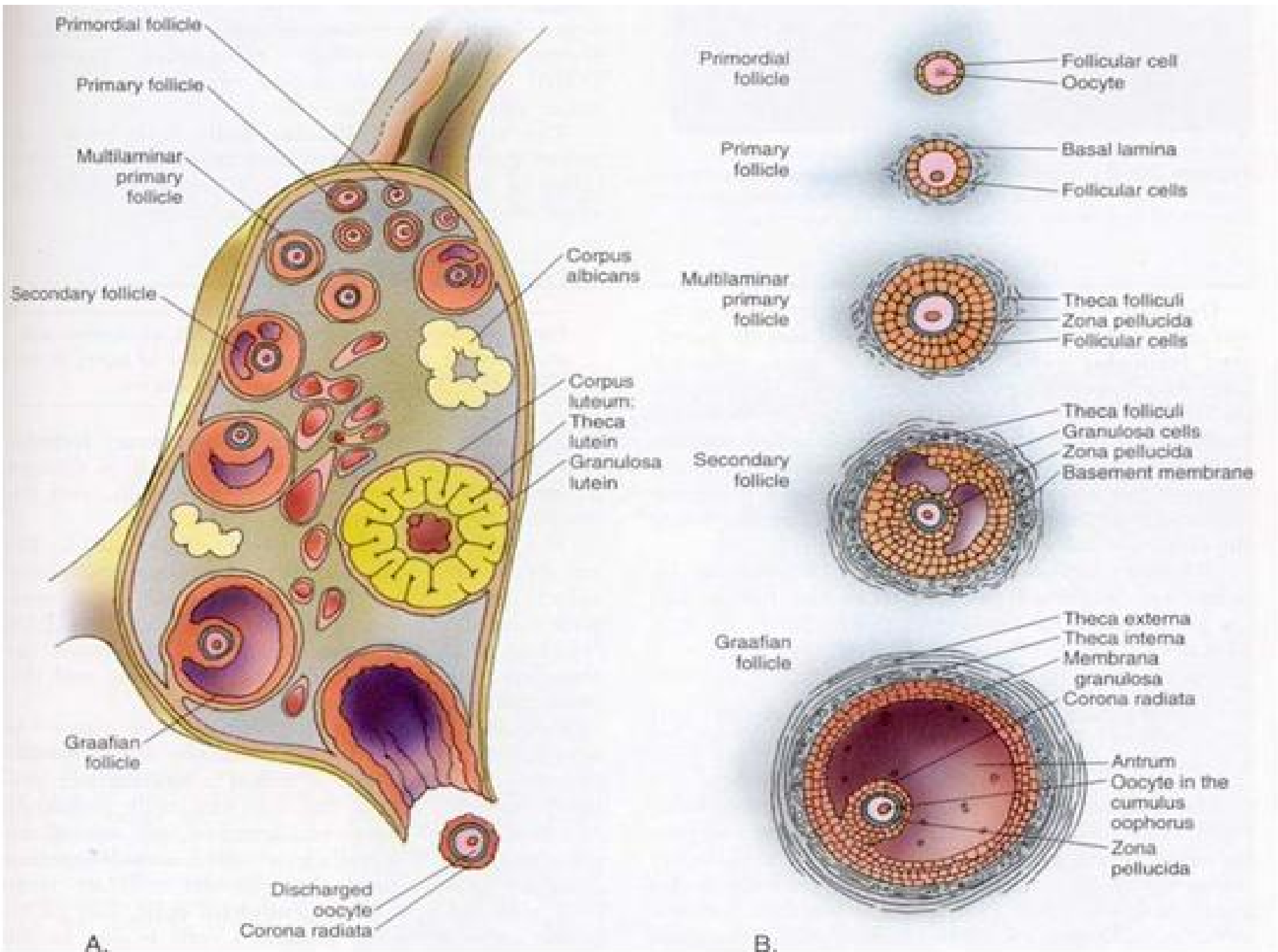
DEVELOPMENT OF OVARIAN FOLLICLE

- Follicular growth and maturation pass through four stages—this process is called folliculogenesis.

1. Primordial follicle—

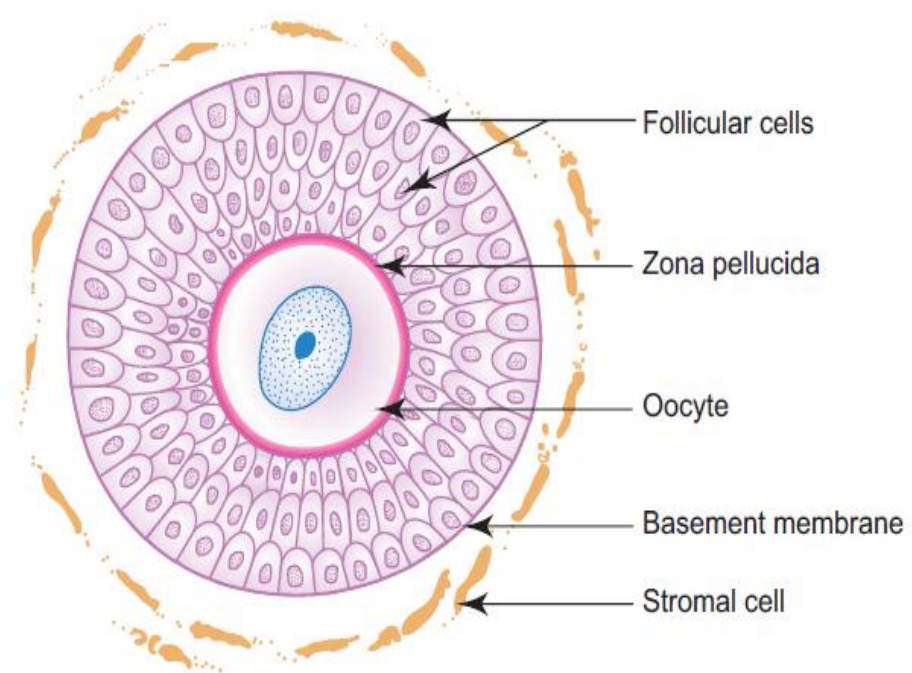
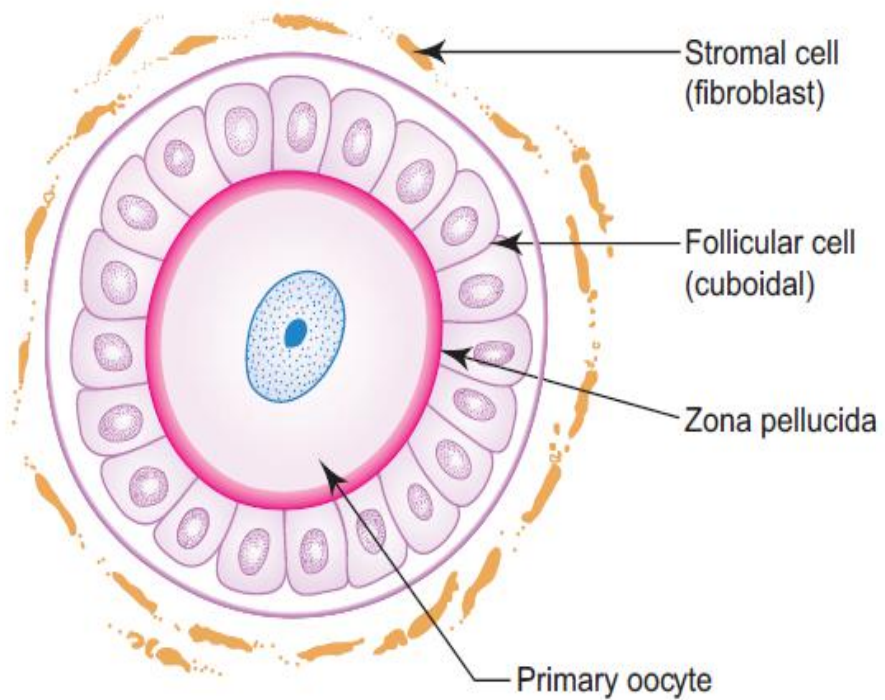
- Located at periphery of the cortex.
- Consist of primary oocyte (20-25um) surrounded by single layer of squamous follicular cells





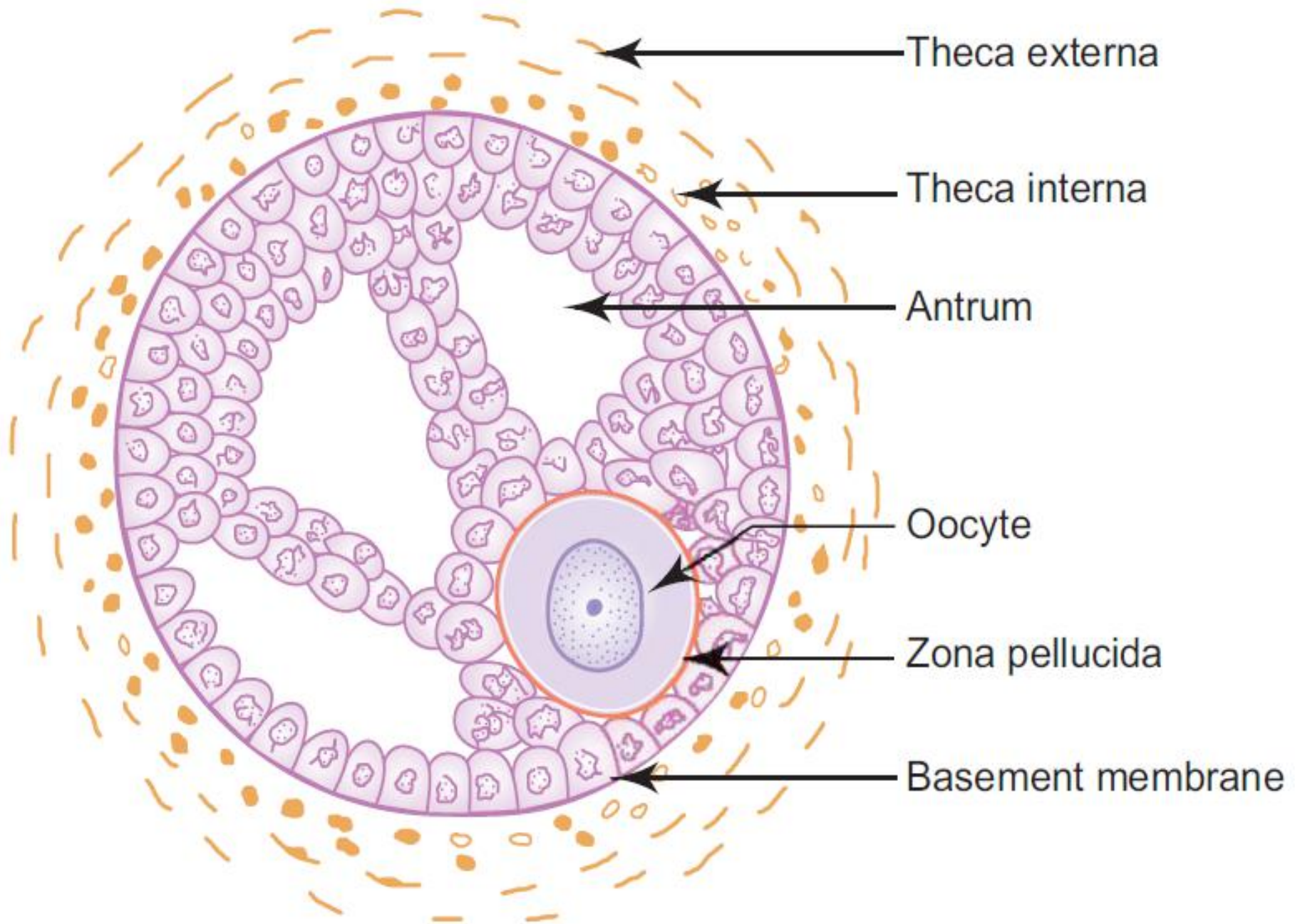
2.Primary follicle—

- Primordial follicle change into primary follicle under influence of FSH.
- Primary oocyte enlarge (50-80 μm).
- Squamous cells becomes ***cuboidal (unilaminar)*** then divide to form ***stratified cuboidal*** layer of ***granulosa cells***.
- Outermost layer cells rest on basement membrane.
- Oocyte is separated from surrounding follicular cells by glycoprotein layer called ***zona pellucida***.
- The connective tissue stroma surrounding the follicle condensed and form ***theca follicle***, which later differentiate into two layers.



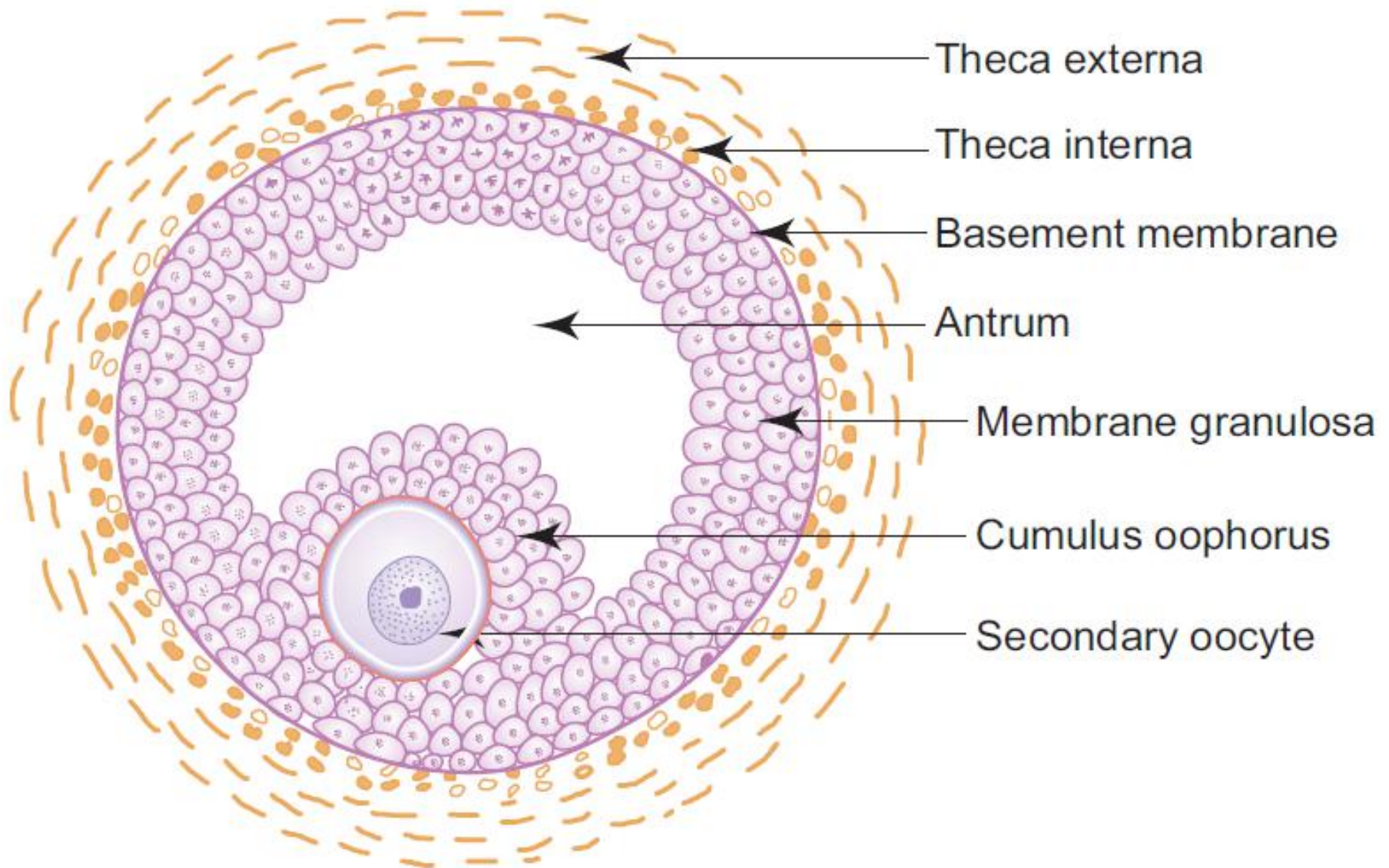
3.Secondary follicle—

- Oocyte enlarges (125um)
- Irregular fluid filled spaces appear among the follicular cells and forms a crescentic space (*antrum*) filled with liquor folliculi.
- Theca folliculi differentiated in two layers→
- Theca interna—cellular layer
- Theca externa—fibrous layer



4. Graafian follicle—

- Mature or tertiary follicle
- Follicle enlarges in size as fluid accumulates in the antrum dividing the follicular cells into two sets.
- Outer set— *membrana granulosa*
- Inner set— *cumulus oophorus*



CORPUS LUTEUM

- After ovulation the wall of follicle collapsed becomes infolded and get transformed into temporary endocrine organ.
- Two types of cells in corpus luteum—
- ***Granulosa luteal cell → Progesterone***
- ***Theca luteal cell → Oestrogen***
- If *fertilisation* occurs it survive for *4-5 months*
- If fertilisation *does not* occurs it functions for *10-12 days*.
- After its functional activity is over it is replaced by fibrous scar, ***corpus albicans ('White body')***

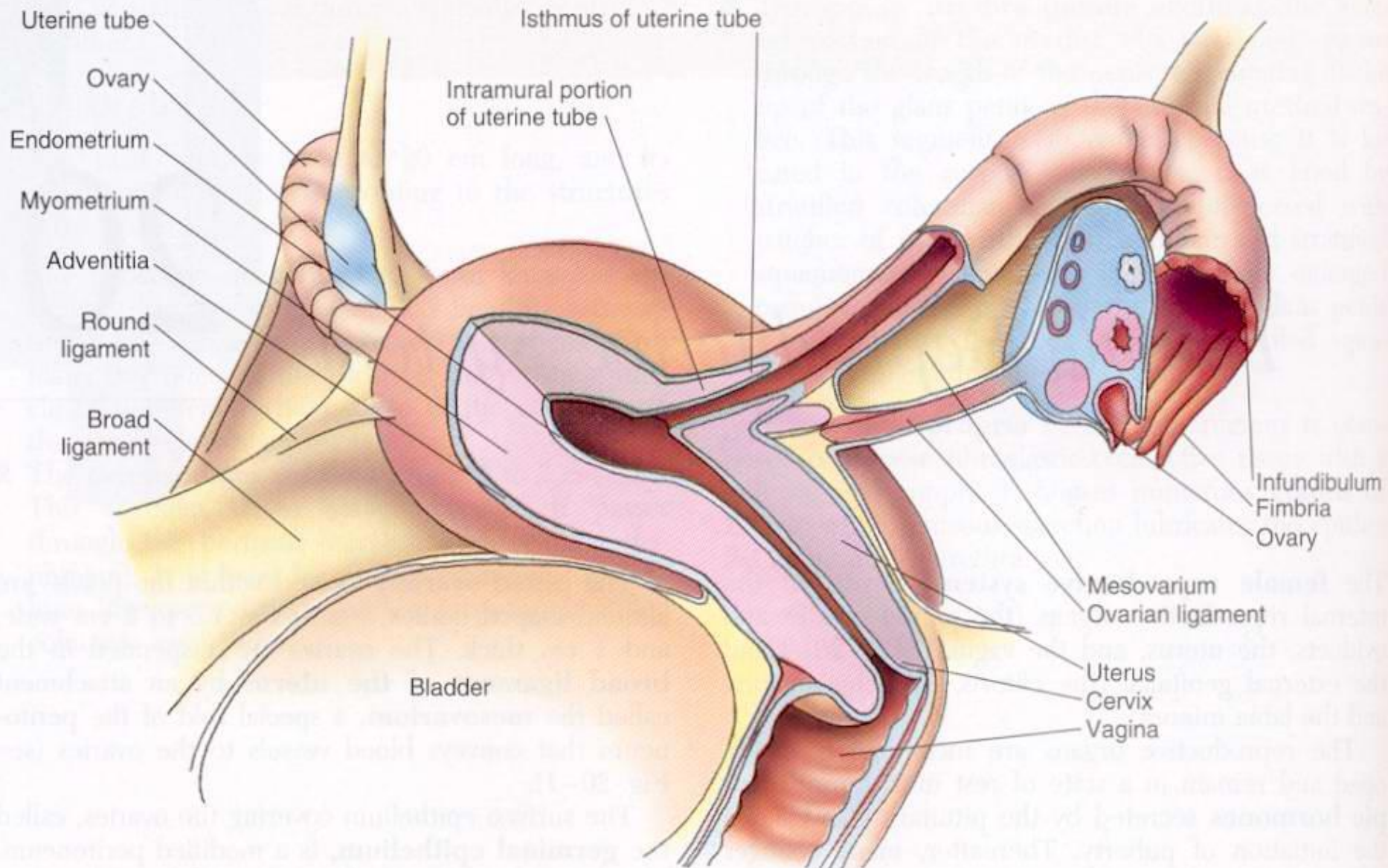
ATRETIC FOLLICLE

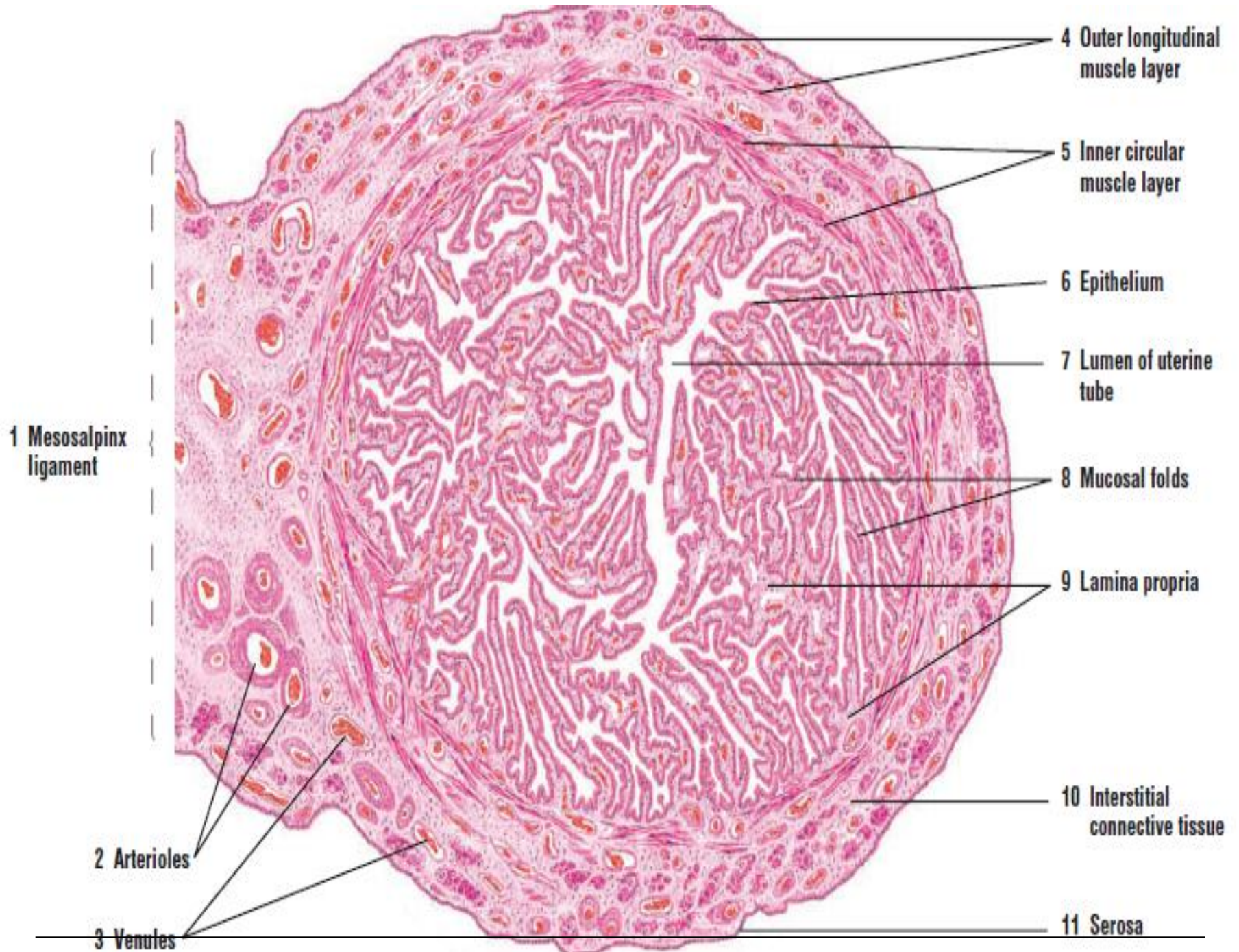
- Several follicle start maturing during each ovarian cycle, but only one matured and undergo ovulation.
- Other follicle degenerated at various stages and becomes atretic follicle.

FALLOPIAN TUBE (UTERINE TUBE)

- Made of three coats—
 - 1.Mucosa**—it includes lining epithelium and thin lamina propria.

Branching mucosal fold but no anastomosis.
 - 2.Muscle layer**—smooth muscle
 - Inner—circular
 - Outer longitudinal
 - 3.Serosa**—mesothelium (peritoneum of broad ligament)





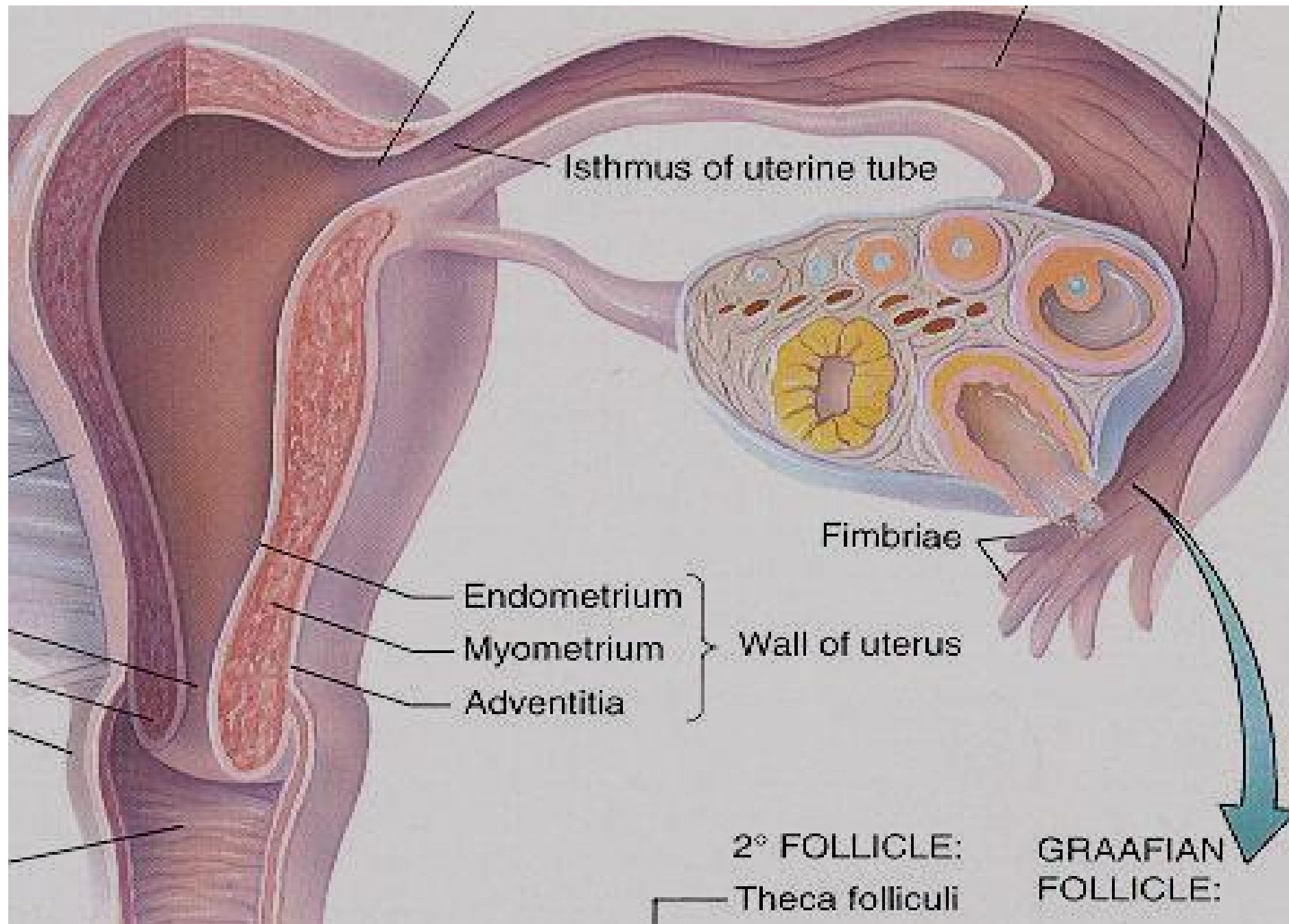
UTERUS

- Uterine wall made of three coats—

1.Perimetrium→ Outer serous coat

2.Myometrium→ middle muscular coat very thick.

- Arranged in three ill defined layers
- Outer— longitudinal
- Middle—circular
- Inner—longitudinal



3. Endometrium → inner mucosal lining

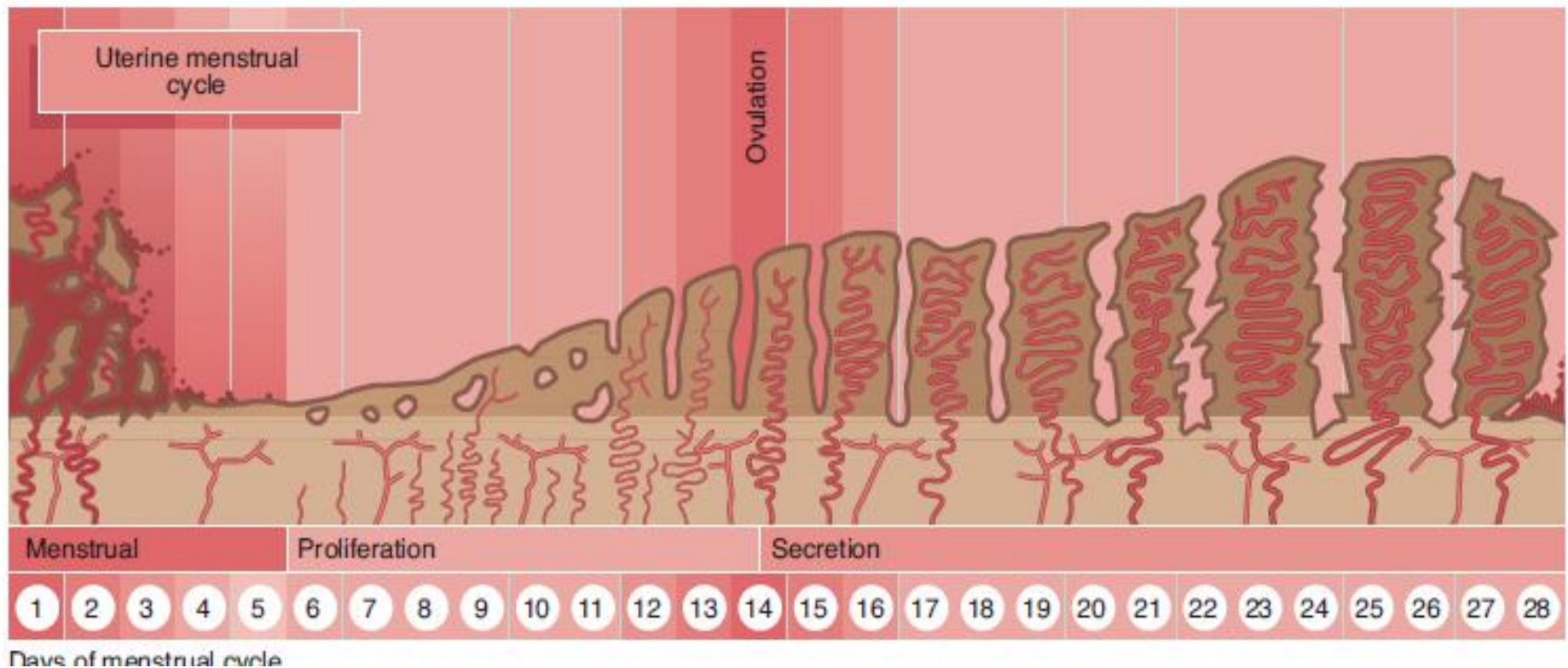
- Lining epithelium—simple columnar (ciliated, secretory)
- Lamina propria (endometrial stroma) very cellular
- Endometrium—two layers*
 - Superficial— *stratum functionalis (compactum & spongiosum) (2/3)*
 - Deep— *stratum basalis (1/3)*

- *Cyclical changes in the endometrium*

i) Menstrual phase → 1-4 days

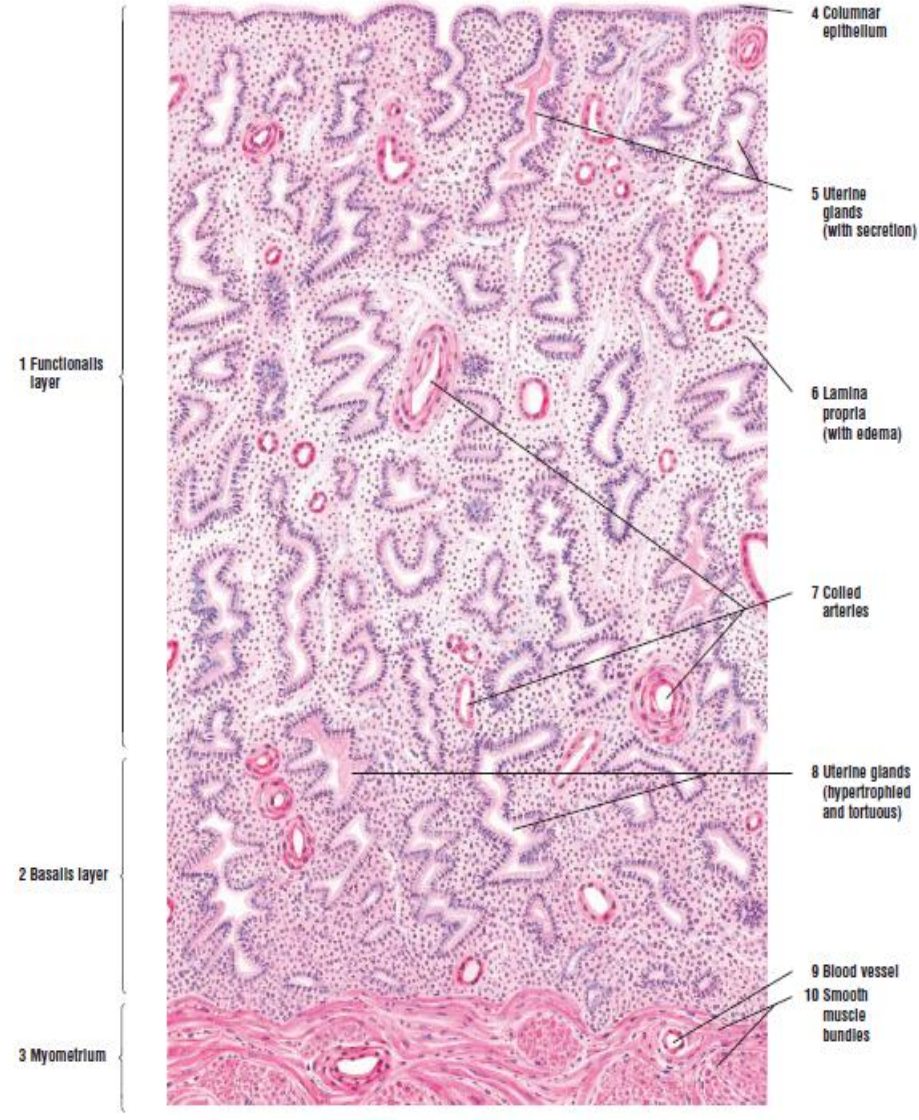
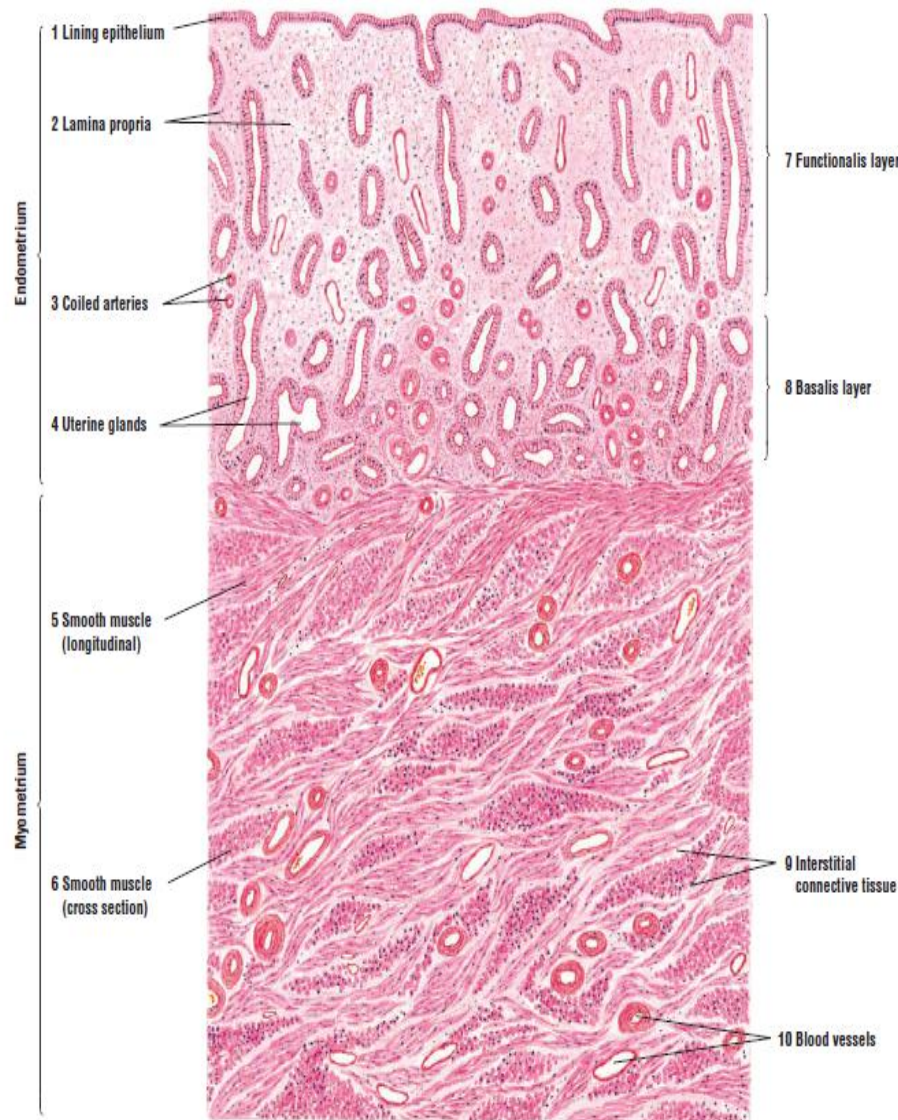
ii) Proliferative phase (follicular phase) → 5-14 days

iii) Secretory phase (luteal phase) → 15-28 days



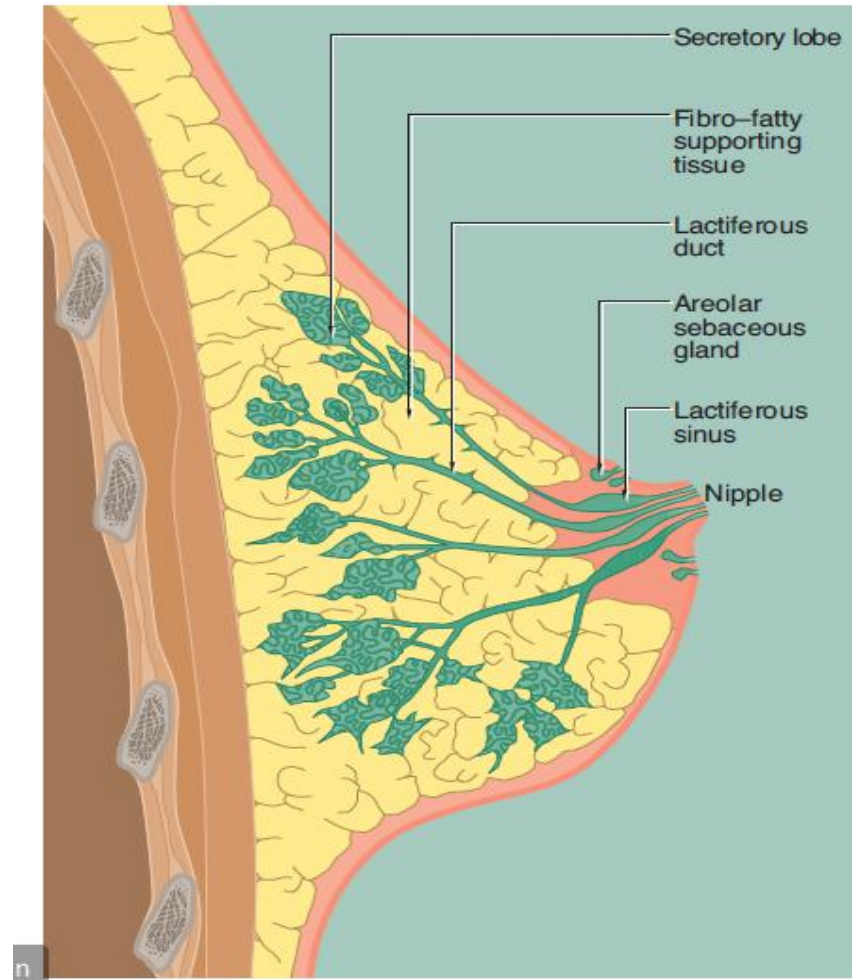
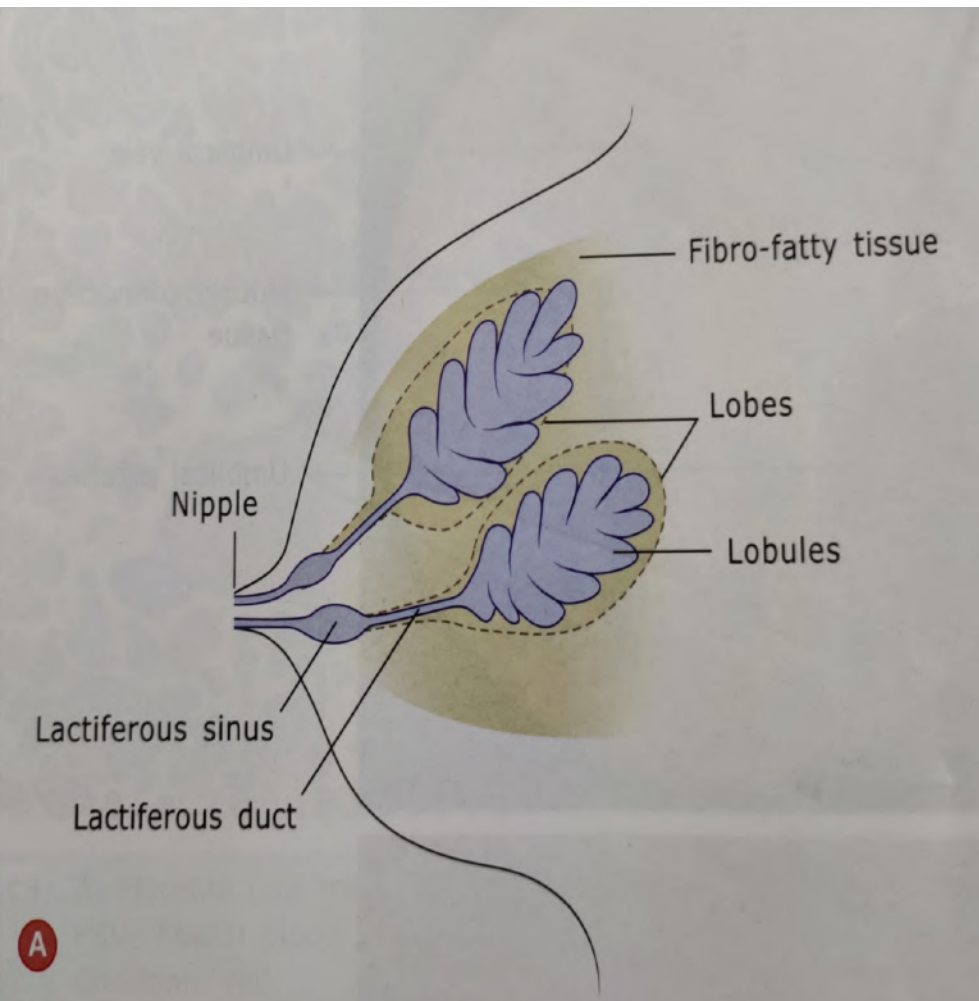
Proliferative

Secretory

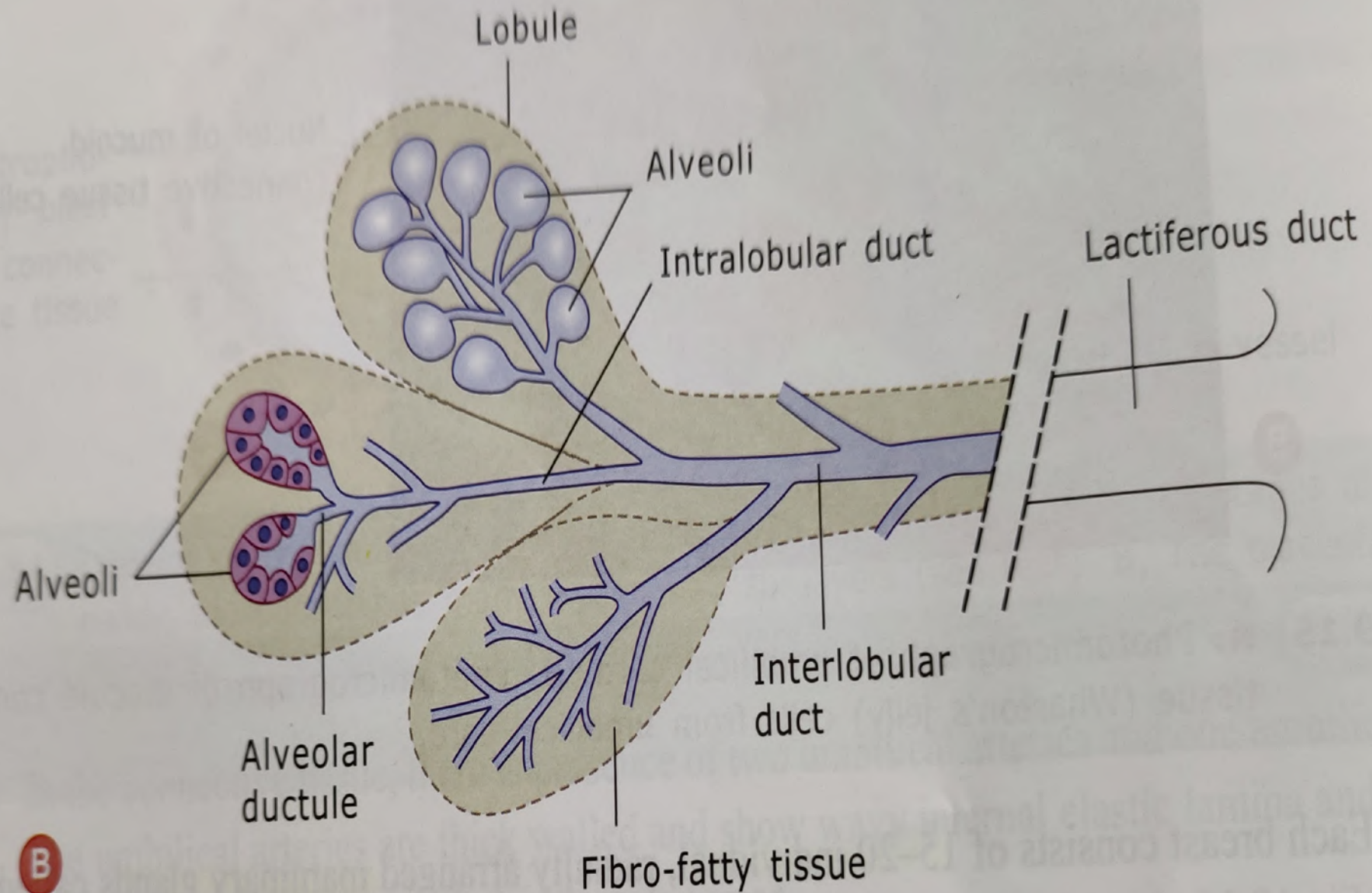


MAMMARY GLAND

- **INTRODUCTION**
- *Modified sweat gland of apocrine type.*
- *Compound tubulo-alveolar gland.*
- *Each gland consists of 15-20 lobes.*
- A single large *lactiferous duct* drains each lobe.
- Each lobe is surrounded by *dense fibrous connective tissue capsule.*
- Capsule in turn is *surrounded by adipose tissue.*
- *Each lobe consists of several lobules.*
- Each lobule is *composed of alveoli.*



- **Duct system** →
- **Alveolar ductule** →
 - Drains an alveolus & line by *cuboidal* epithelium.
- **Intralobular duct** →
 - Lined by *cuboidal* epithelium
- **Interlobular duct** →
 - Lined by *cuboidal* to *columnar* epithelium.
 - Present in connective tissue septa.
- **Lactiferous duct(lobar duct)** →
 - Lined by *columnar* epithelium.
 - Lactiferous sinus** lined by *two layers of cuboidal* or *pseudostratified columnar* epithelium.



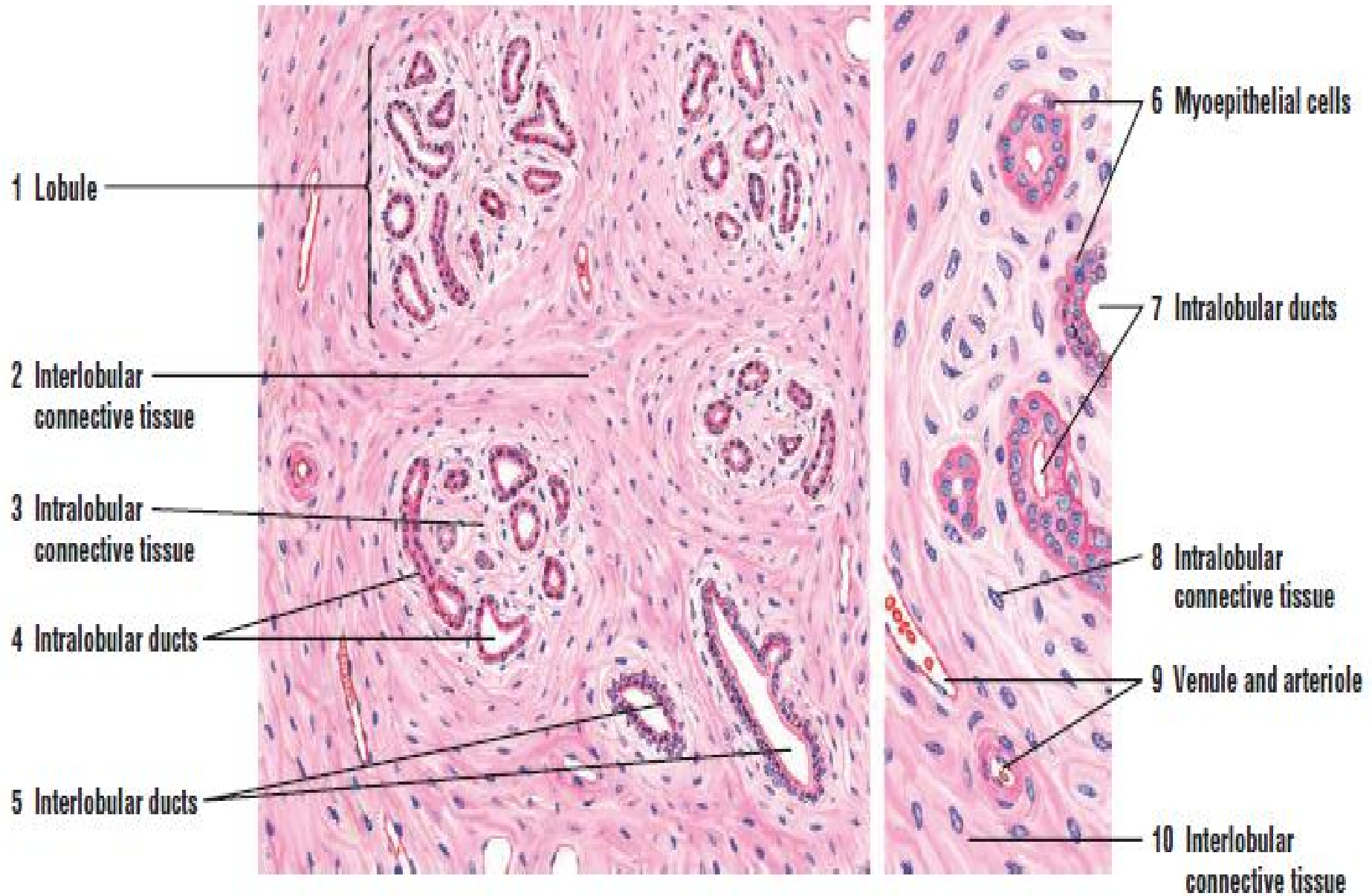
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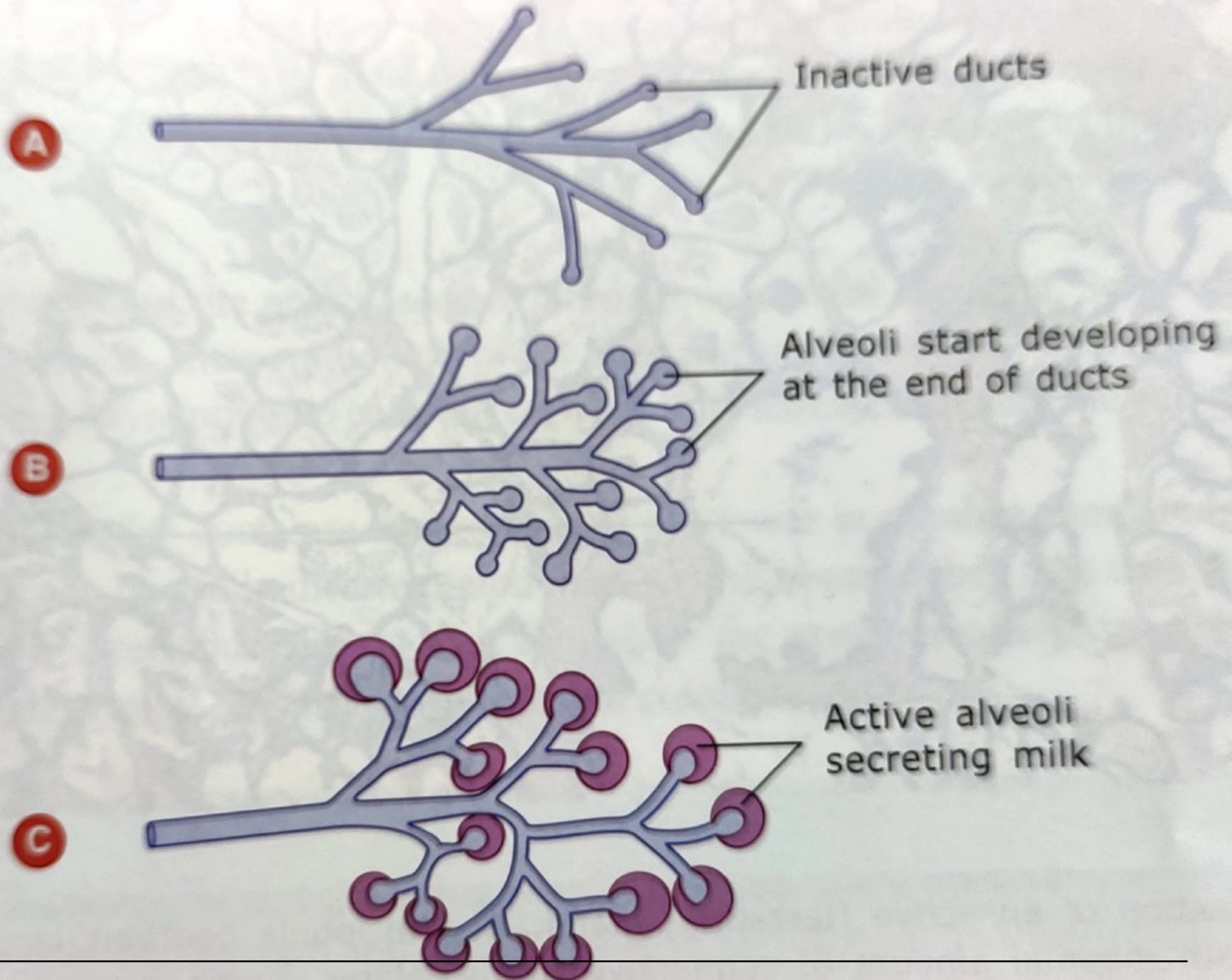
- **LACTATING GLAND**

- Lobules are packed with **secretory alveoli**.
- Interlobular stroma is **reduced** to thin septa.
- Alveoli are **large** of irregular outline.
- Lined by single layer of **cuboidal** to **columnar** epithelium.



- ***NON- LACTATING GLAND***
- Resting gland shows clusters of ducts separated by abundant fibro-fatty tissue.
- Alveoli shrink and lumen may be lost.
- Lined by simple cuboidal epithelium





Age changes in mammary gland

- *At birth* →
 - Rudimentary duct system is present in fibrous stroma.
- *Till puberty* →
 - Growth by deposition of fibro-fatty tissue.
 - Only ducts slightly branched.
- *At puberty* →
 - Proliferation of duct system
 - Ends of ducts form solid spherical masses.
 - Secretory unit do not develop.

- ***During pregnancy* →**
 - a) In 1st half—
 - Proliferation and branching of ducts.
 - Secretory alveoli develop
 - b) In 2nd half—
 - Alveoli enlarge and elaborate secretion precursor.
- ***After lactation* →**
 - Gland returns to resting condition.
- ***After menopause* →**
 - Gland involutes undergoes regressive changes.
 - Parenchyma decreases and replaced by fibro-fatty tissue

TOPIC FOR HISTOLOGY EXAM

- NERVOUS TISSUE
- LYMPHATIC STSTEM
- INTEGUMENTARY SYSTEM(SKIN)
- RESPIRATOTY SYSTEM
- DIGESTIVE SYSTEM I
- DIGESTIVE SYSTEM II
- DIGESTIVE SYSTEM III