Histology Team 431

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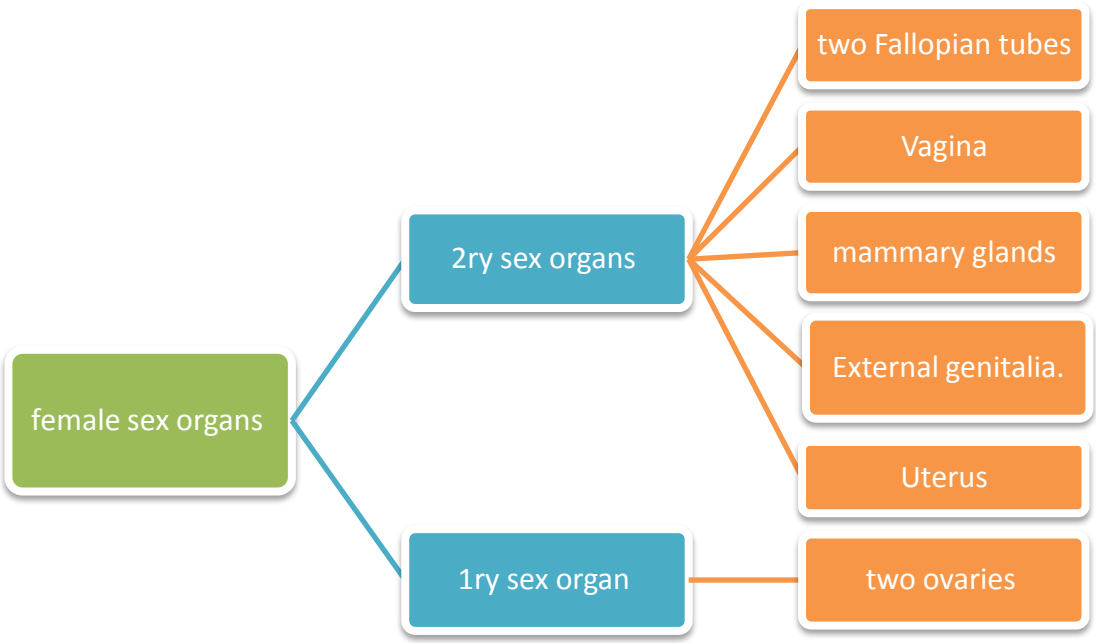
Type of epithelium

Extra team's notes/mentioned by the female doctor

Female Reproductive System



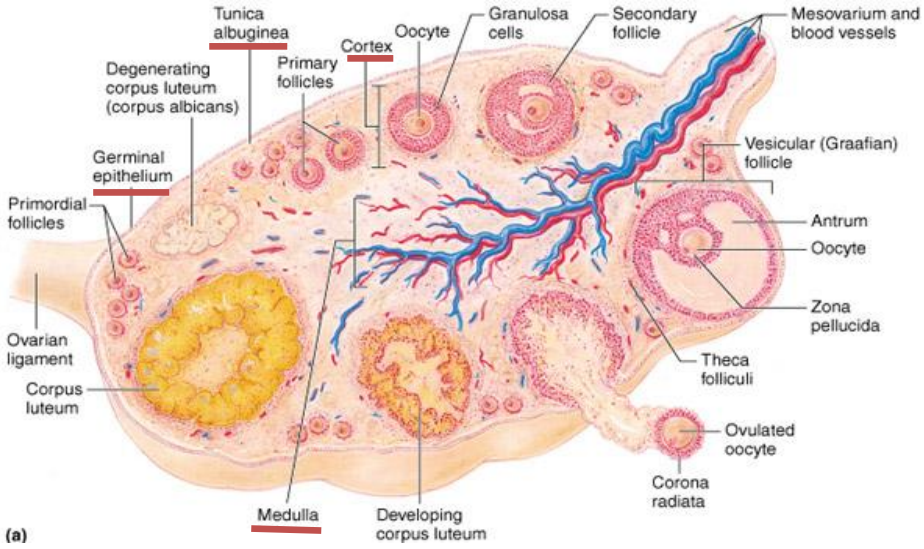
ADULT OVARY

Germinal epithelium: outer layer of flat cells.

Tunica albuginea: dense C.T layer.

outer cortex: ovarian follicles and interstitial cells.

Inner medulla: highly vascular loose C.T



Ovarian Cycle

Ovarian Follicles

The cortex of the ovary in adults contains the following types of follicles:

1-PRIMORDIAL follicles.

2-PRIMARY follicles:

a.Unilaminar

b.Multilaminar

3-SECONDARY (ANTRAL) follicles.

4-MATURE Graafian follicles.

1-Primordial Follicles:

The only follicles present before puberty.

The earliest and most numerous stage.

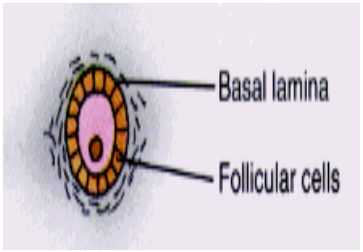
Located superficially under the tunica albuginea.

Each is formed of a primary oocyte (25 µm), surrounded by a single layer of flat follicular cells.

2-Primary Follicles:

They develop from the primordial follicles, at puberty under the effect of FSH.

a.Unilaminar primary follicles:

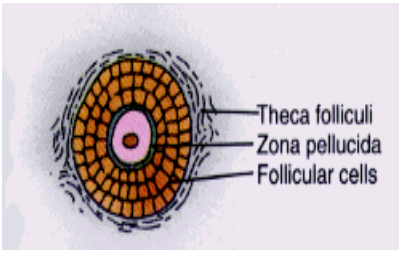


Are similar to primordial follicles, but:

*The primary oocyte is larger (40 µm).

*The follicular cells are cuboidal in shape.

b.Multilaminar primary follicles:



1ry oocyte larger

Corona radiata

Granulosa cells

Zona pellucida

Theca folliculi

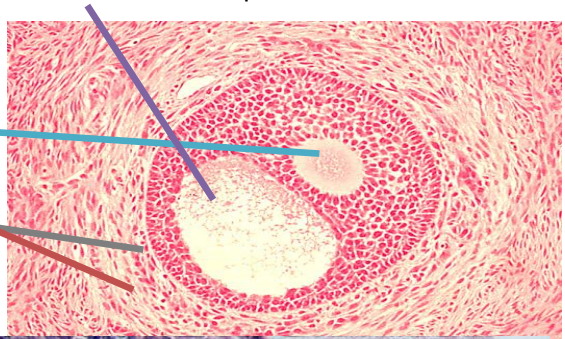
Follicular fluid (liquor folliculi)

3-Secondary (Antral) Follicles

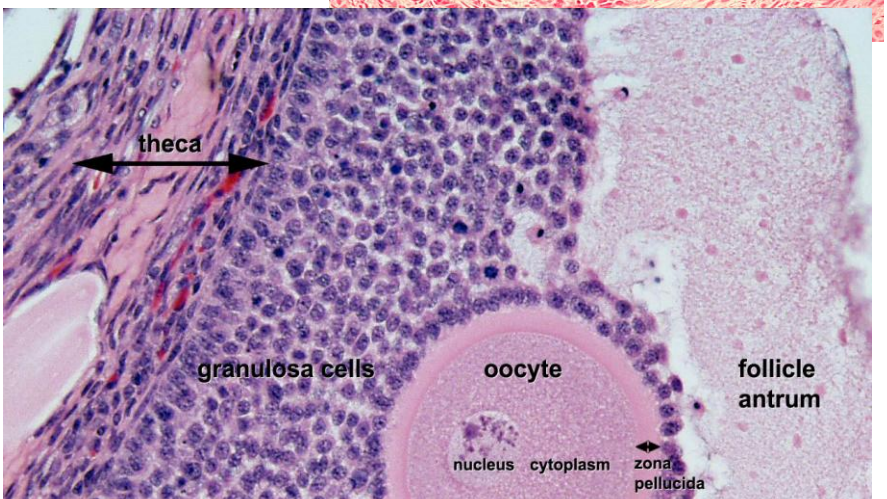
Multilaminar primary follicles become secondary follicles when a complete antrum filled with liquor folliculi is formed.

1ry oocyte is pushed to one side.

Theca folliculi differentiates into theca interna and theca externa



4-Mature (Graafian) Follicle:



-Large, thin walled

-Wide follicular antrum

-Large 1ry oocyte

-Zona pellucida

-Corona radiata

-Discus proligerus*

-Zona granulosa

-Basement membrane

-Theca folliculi: theca interna & theca externa

*The **cumulus oophorus** also called **discus proligerus**, is a cluster of cells (called **cumulus cells**) that surround the oocyte both in the ovarian follicle and after ovulation. In the antral follicle, it may be regarded as an extension of the membrana granulosa. The innermost layer of these cells is the corona radiata. (wiki)

Atretic Follicles

During growth of the ovarian follicles, many of them do not reach maturation and they degenerate, and are finally replaced completely by fibrous tissue and are called atretic follicles or corpora atretica.

Ovulation and Corpus Luteum Formation:

Ovulation occurs at day 14 of the cycle, under the effect of LH.

The follicle collapses and forms a corpus luteum.

zona granulosa →granulosa lutein cells.

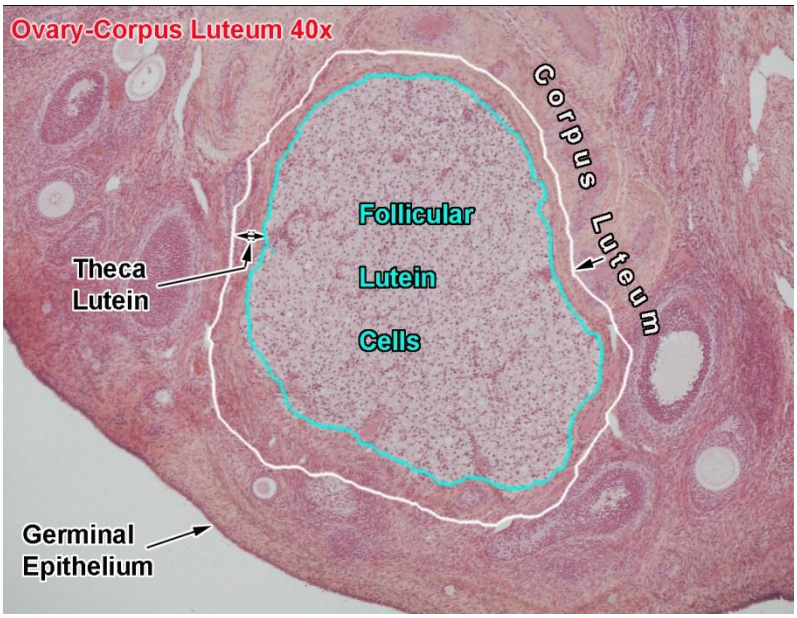
Theca interna →theca lutein cells.

Bleeding may occur →corpus haemorrhagicum.

Fertilization →corpus luteum of pregnancy.

No fertilization →corpus luteum of menstruation.

At the end → corpus albicans



Corpus luteum of menstruation lasts about 10 days

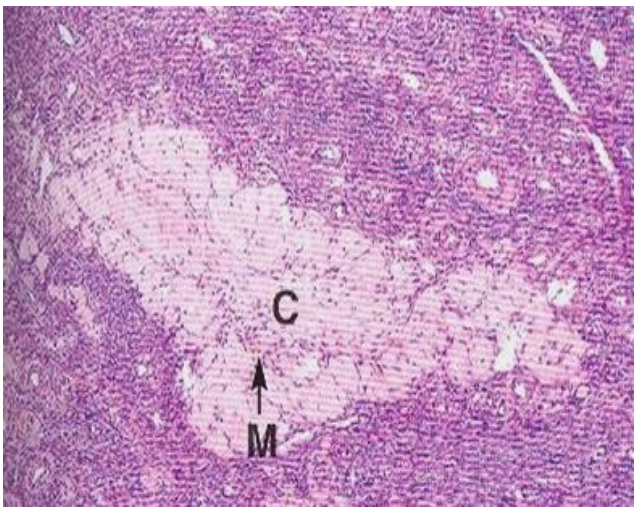
Corpus luteum of pregnancy persists for six months.

Fate of corpus luteum: formation of a white degenerated fibrous body, corpus albicans.

Function of corpus luteum:

Granulosa lutein cells: secrete progesterone

Theca lutein cells: secrete estrogen.



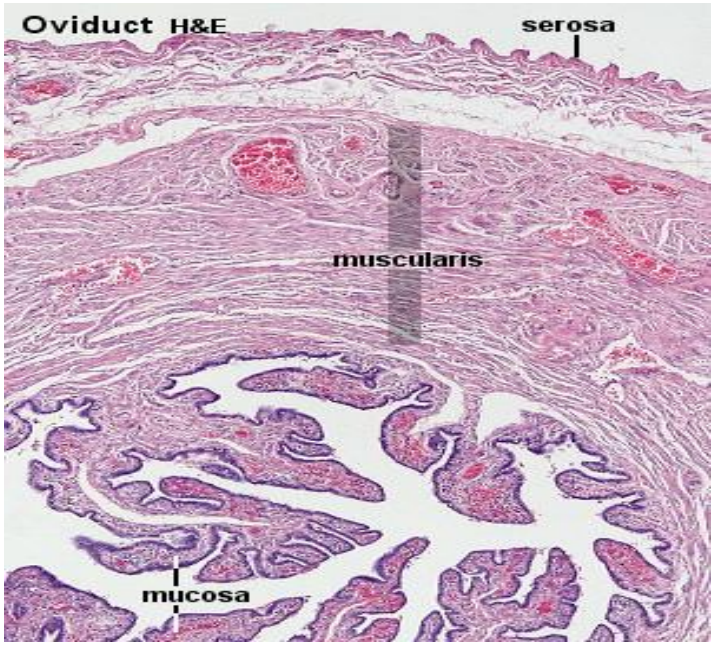
Corpus Albicans

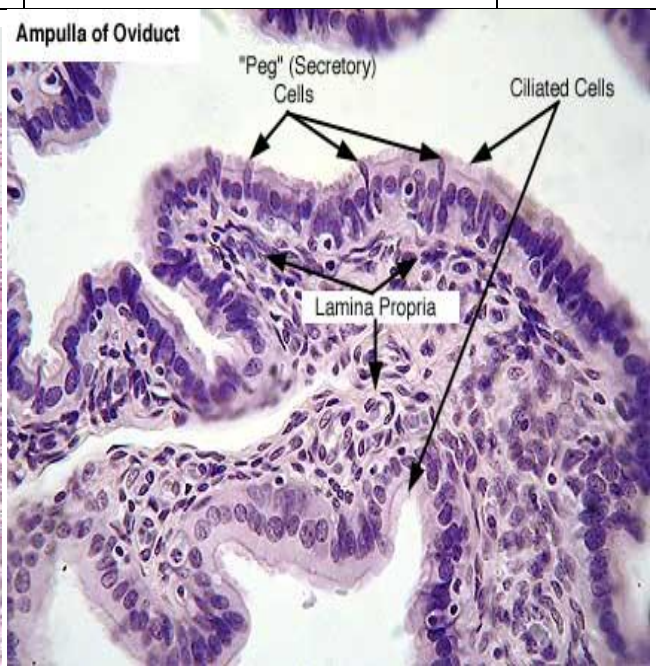
It is a white degenerated fibrous body formed by involution of corpus luteum (degenerated corpus luteum).

Secretory cells of corpus luteum degenerate and are phagocytosed by macrophages

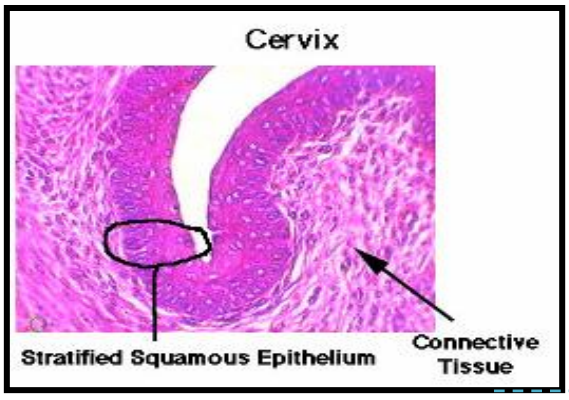
Oviducts (Fallopian Tubes/ uterine tubes)

Oviducts (Fallopian Tubes/ uterine tubes)		
Mucosa	**Musculosa**	**Serosa**
1-Highly folded. **2-Epithelium: Simple columnar partially ciliated.** a-**Ciliated cells:** Non-secretory. Cilia beat **toward uterus** to facilitate the transportation of the zygote or oogonium to the uterus. b-**Non-ciliated cells:** Thinner, also called **peg cells**. Secretory cells. Apices **bulge** above ciliated cells.Their apices contain nutritive material to **nourish gametes.** **3-Corium of C.T.**	1-Inner circular. 2-Outer longitudinal. *But these smooth muscles are poorly organized.	-



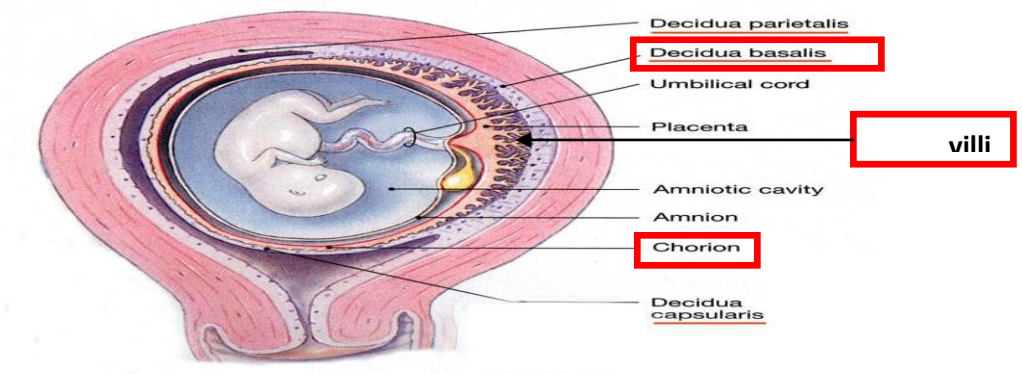


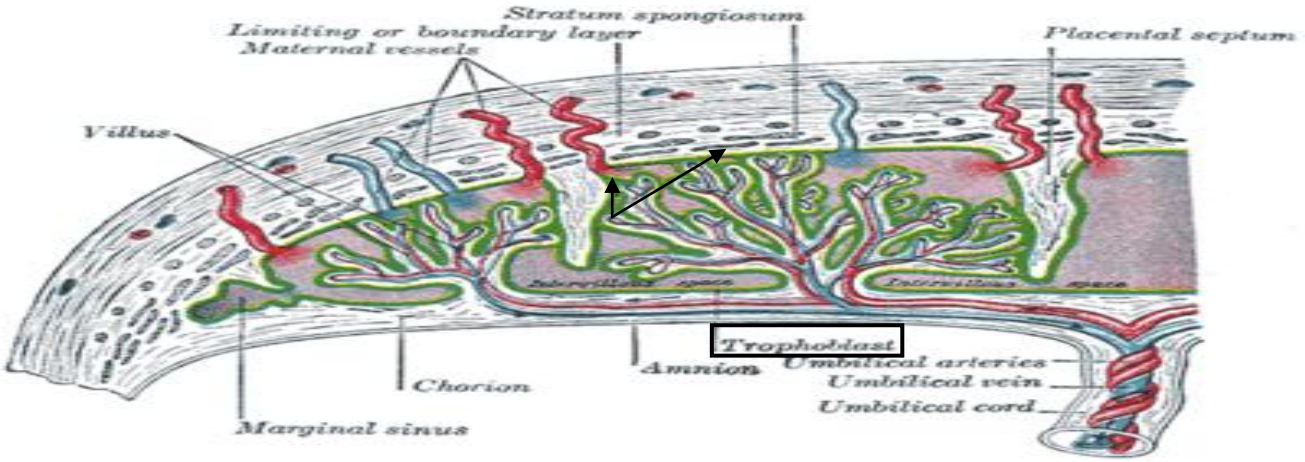
UTERUS		
Fundus & Body: (muscular wall+ thin lumen)		**Uterine Cervix**
Endometrium	**Myometrium(3 smooth muscle layer)**	Note:
1-**Epithelium:** simple columnar partially ciliated (ciliated+ peg) 2-**Corium:** -Endometrial glands **(simple tubular glands).** -Stromal cells (highly functioning during pregnancy). -Blood vessels. -Leucocytes. -Reticular fibers. **During menstruation the endometrium is divided into two regions:** **1-superficial functional zone:** detachment and renewing occur during menstrual cycle. Contains coiled arteries. The convolutions prevent the rupture of the arteries due to the thickening of this zone that happens just before the menstruation. **2-basal zone:** contains straight main arteries that produce the coiled arteries in the functional zone. Note: Only the mucosa of the body & fundus of the uterus takes part in the menstrual cycle.	**1-Stratum submucosum:** longitudinal. **2-Stratum vasculare**: circular smooth muscle fibres in figure of **8 arrangement** around large blood vessels. These muscles contract to stop the bleeding during menstruation & causing cramps. **3-Stratum supravasculare:** longitudinal. The myometrium is covered by **Perimetrium**: C.T + mesothelium.	1-Mainly, it composed of dense fibrous C.T. **It is not a muscular because it contains few smooth muscle fibers.** 2-The mucosa **doesn't change** during menstruation. **Mucosa:** 1-**Epithelium: simple columnar in the cervical canal (endocervix)**, but it changes to **stratified squamous epith. (non-keratinized) at the external os (exocervix).** **2-Corium:** CT containing tubulo-alveolar glands.

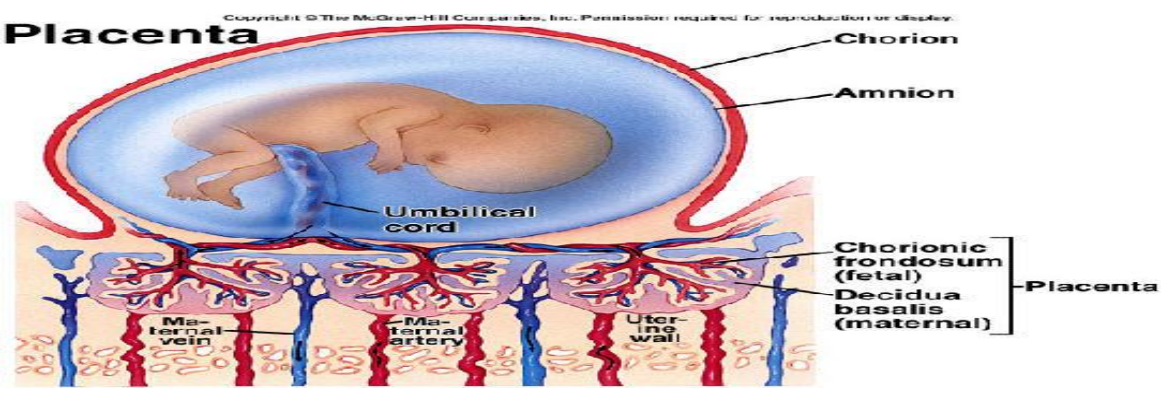


VAGINA		
Mucosa	**Musculosa**	**Adventitia**
shows transverse folds and is made of: **-Epithelium: stratified squamous epithelium non-keratinized**, rich in glycogen. **-Corium:** of dense C.T., very rich in blood vessels, elastic fibres and leucocytes.	formed of interlacing inner circular and outer longitudinal layers of smooth muscle fibres.	formed of loose C.T.

PLACENTA	Placental Barrier
1-Maternal part (decidua basalis); **Decidua** is the term for the uterine lining (endometrium) during a pregnancy, which forms the maternal part of the placenta. It is formed under the influence of progesterone and forms highly-characteristic cells. **2-Foetal part (chorionic villi):** are villi that sprout from the chorion in order to give a maximum area of contact with the maternal blood, **villi related to the fetal part of the placenta, they protruded into the endometrium which is rich in free maternal blood.** ❖ Each chorionic villus consists of: -Mesenchymal C.T core containing fetal blood vessels. -Epithelial covering (trophoblast), made of 2 layers: a-Outer syncytiotrophoblast: deeply stained with **no cell boundaries.** b-Inner cytotrophoblast: **disappears late in pregnancy.**	It is the barrier between the maternal and foetal blood. It consists of: 1.The trophoblast covering the villus. 2.The basement membrane of the trophoblast. 3.The C.T. core of the villus. 4.The basement membrane of foetal capillaries. 5.The endothelium of foetal capillaries.





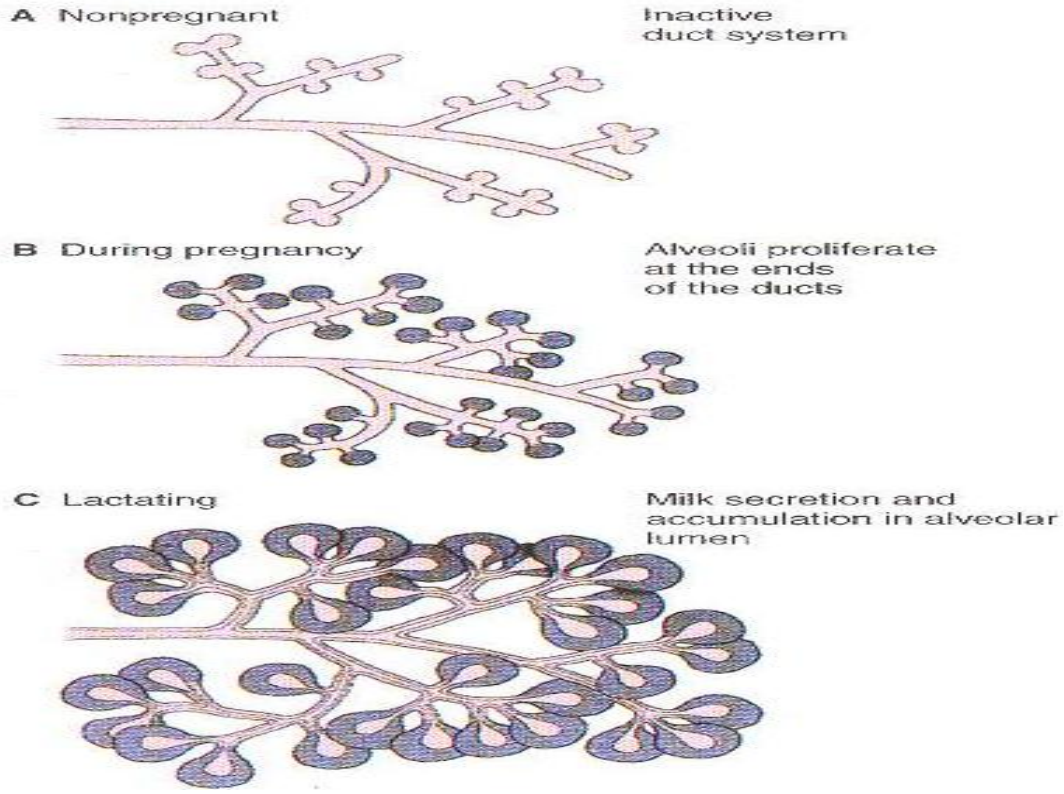


MAMMARY GLAND

At puberty they enlarge by accumulation of fat.

Before pregnancy: adipose C.T + ducts. After pregnancy: glands appear if the women get pregnant even once. After labour the glands start to function & secrete milk.

Resting (before pregnancy) mammary gland	Lactating mammary gland
-It is divided into lobes and lobules. -The interlobular C.T. is dense and contains numerous fat cells. -The intralobular C.T. is loose and contains no fat cells. -Within the lobules, there are widely separated ducts lined by simple cuboidal epithelium. -Ducts collect to form lactiferous ducts lined by stratified columnar epithelium and open at the top of the nipple. The lactiferous ducts become dilated before their termination, forming the lactiferous sinuses which are lined by stratified squamous epithelium.	-Interlobular and intralobular C.T. become reduced. -Lobules are made of ducts and alveoli. -Alveoli are distended with milk and lined by cuboidal or flat cells surrounded by myoepithelial cells. -Milk appears acidophilic with vacuoles of dissolved fat.



QUESTIONS

1- A lactating breast has which one of the following features:

A- Ducts lined by simple squamous epithelium

B- Breast shows numerous acini

C- Increase in the adipose tissue

D- Increased intralobulor CT

2- Which one of the following can be found in a mature grafian follicle:

A- zona pellucida

B- granulosa lutein cells

C- theca lutein cells

D- cytotrophoblast

3- Which one of the following is correct about the cervix:

A- rich in smooth muscle fibers

B- cervical canal is lined by simple columnar epithelium

C- vaginal part is lined by simple columnar epithelium

ANSWERS

1-B, 2-A, 3-B