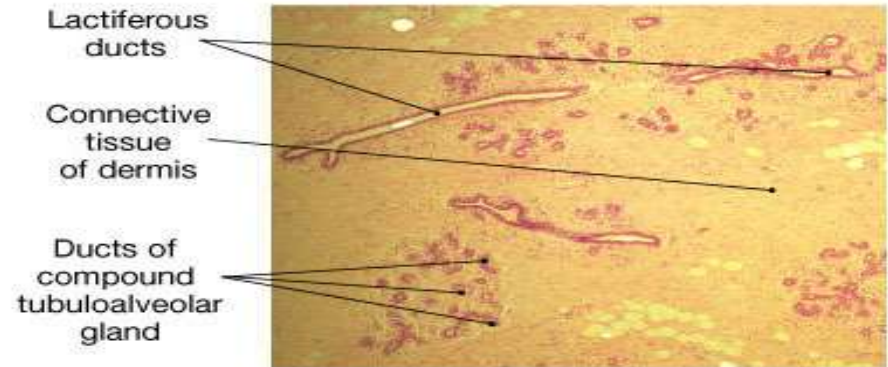
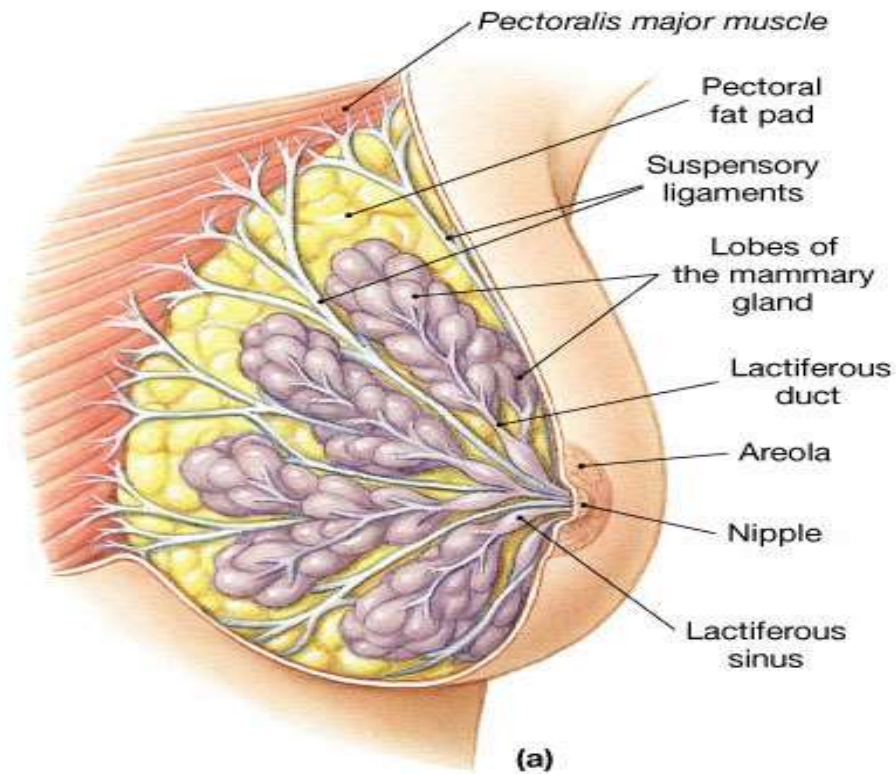


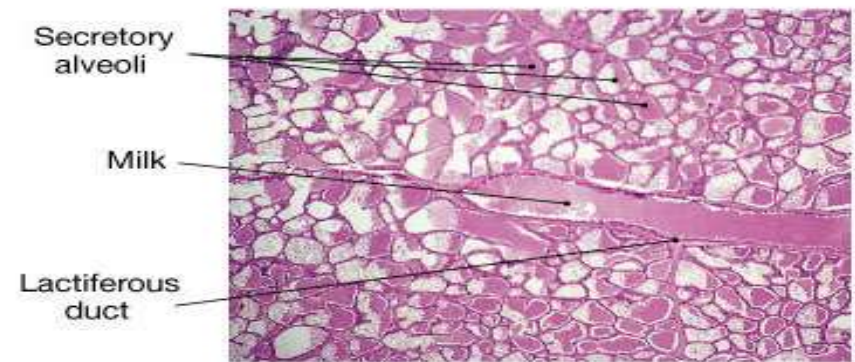
BREASTS ANATOMY



The Mammary Glands

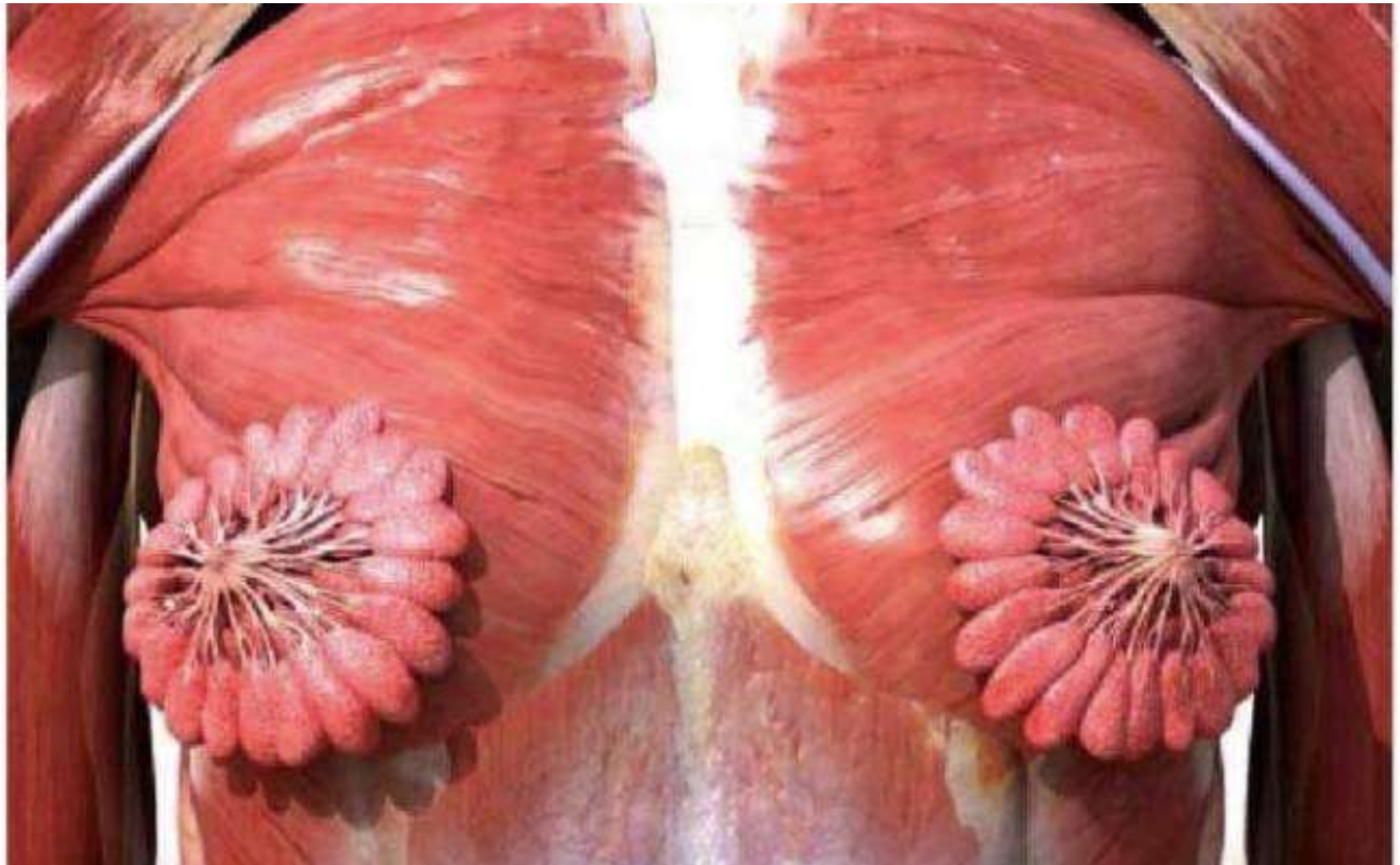


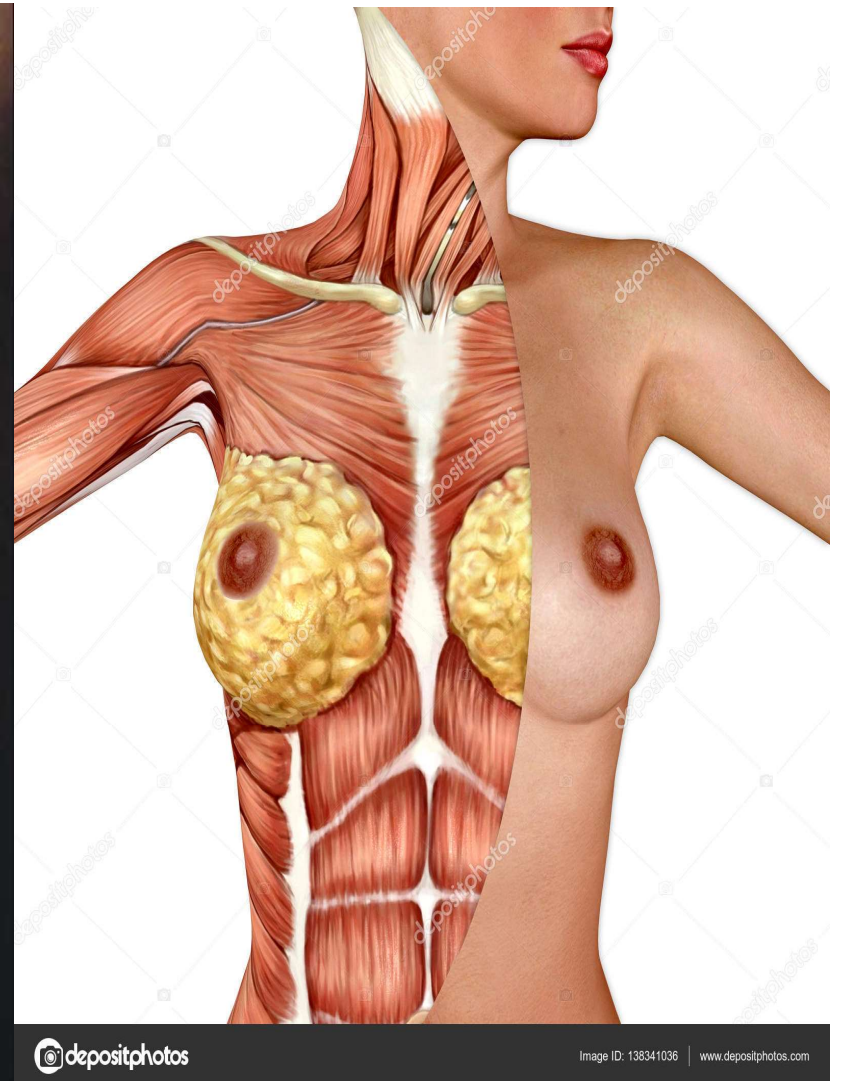
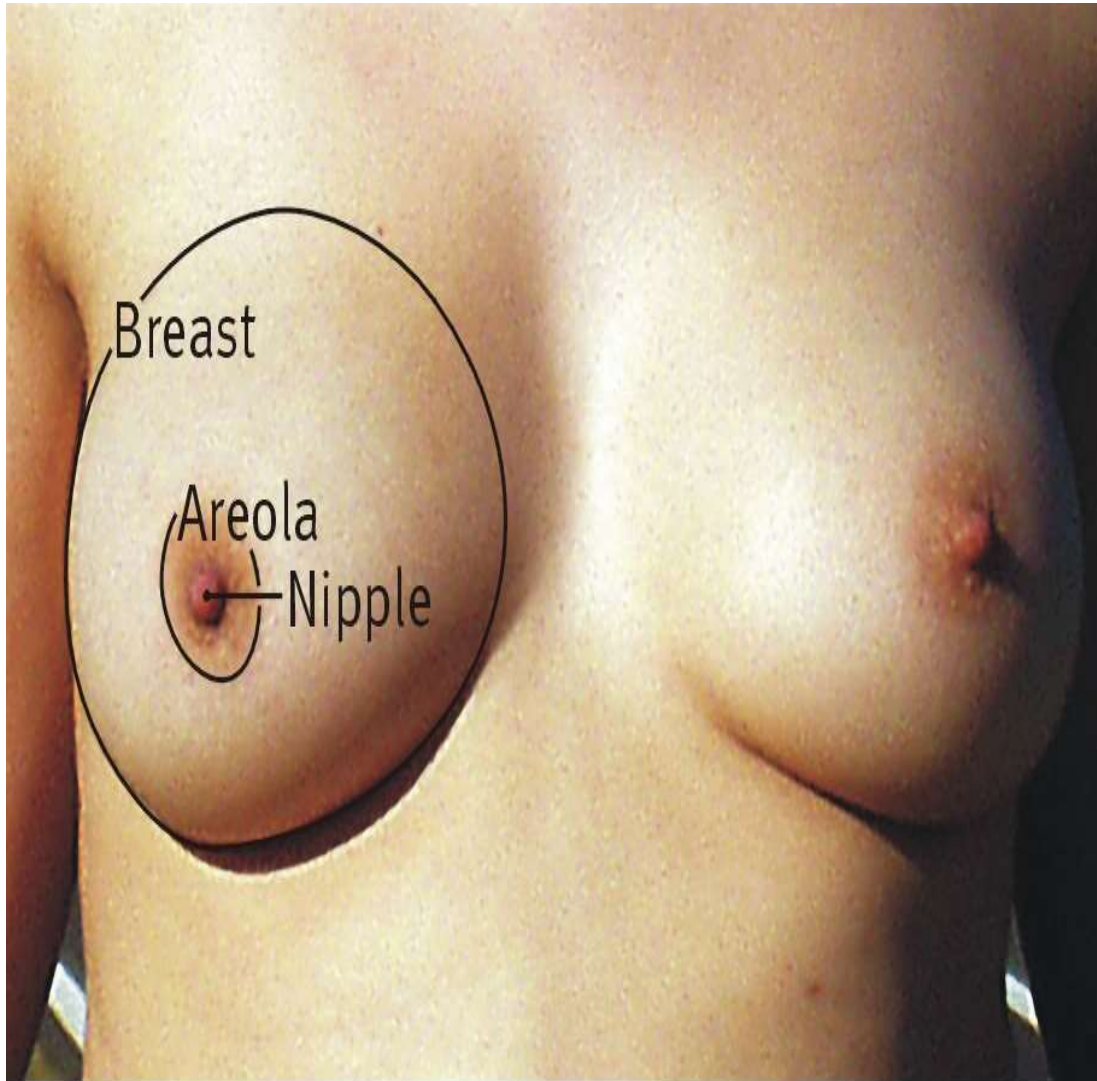
(b) Inactive mammary gland



(c) Active mammary gland

Figure 28.23a-c





BREASTS

- ❑ Organs of sexual arousal
- ❑ Contain mammary glands
- ❑ Consist of connective tissue that serves as support
- ❑ Each breast contain 15-25 clusters called lobes
- ❑ Each lobule is connected by ducts that open into the nipples
- ❑ The nipples are made up of erectile tissue
- ❑ The pigmented around the nipples are called the areola
- ❑ Breast size is determined primarily by heredity
- ❑ Size also depends on the existing fat and glandular tissue
- ❑ Breasts may exhibit cyclical changes, including increased swelling and tenderness prior to menstruation
- ❑ Benign breast changes refer to fibrocystic disease
- ❑ Lumps or masses that are noncancerous

Breast

- The breasts of an adult woman are milk-producing, tear-shaped glands.
- They are supported by and attached to the front of the chest wall on either side of the breast bone or sternum by ligaments.
- They rest on the pectoralis major
- The breast has no muscle tissue. A layer of fat surrounds the glands and extends throughout the breast

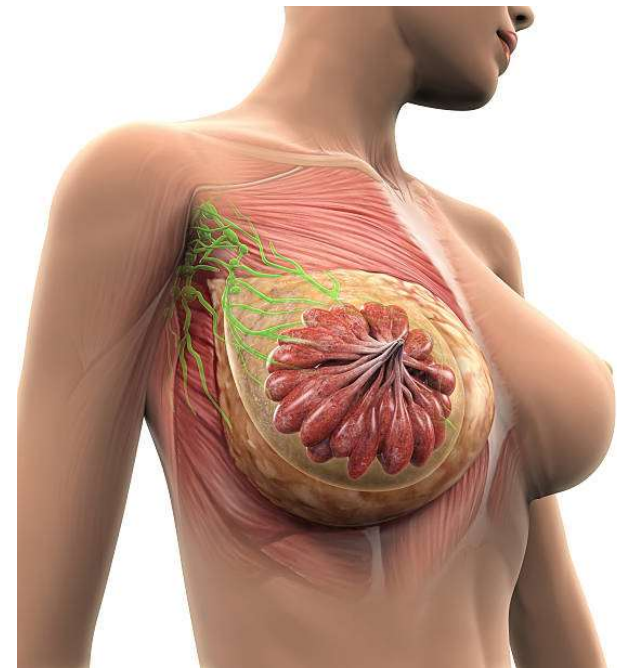
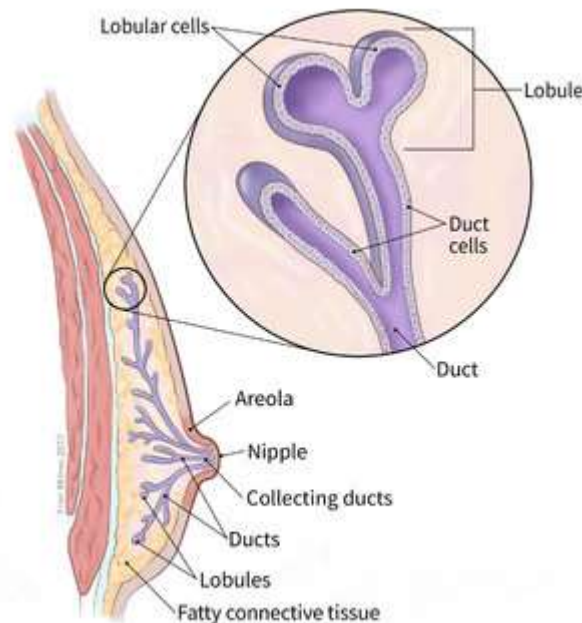
Anatomy

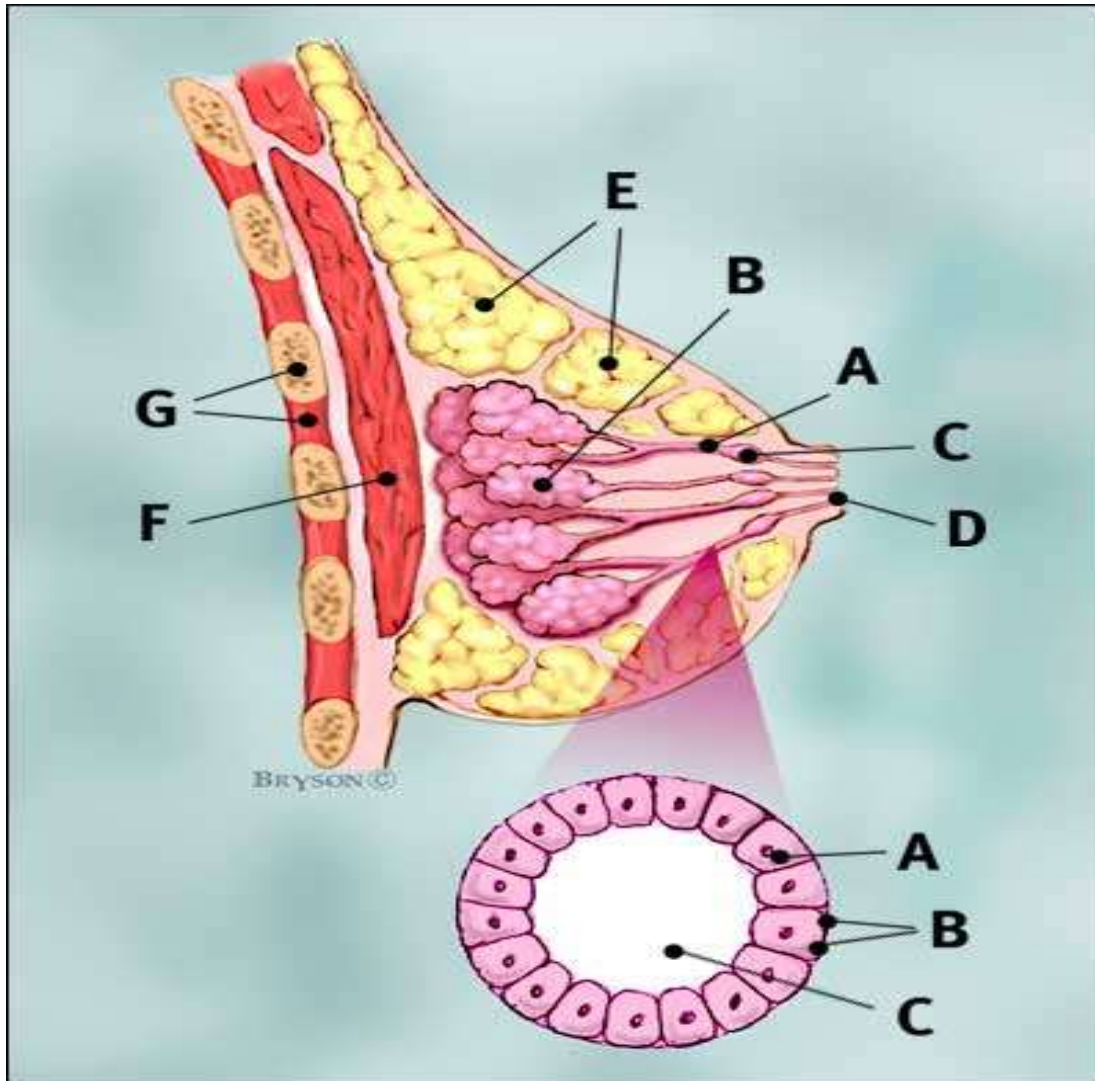
1.15-20 lobes

2.lobe:lobules, small branch, and larger ducts.

3.Radial fashion

4.Peripheral portions of lobes often overlap





Breast profile:

A ducts

B lobules

C dilated section of duct to hold milk

D nipple

E fat

F pectoralis major muscle

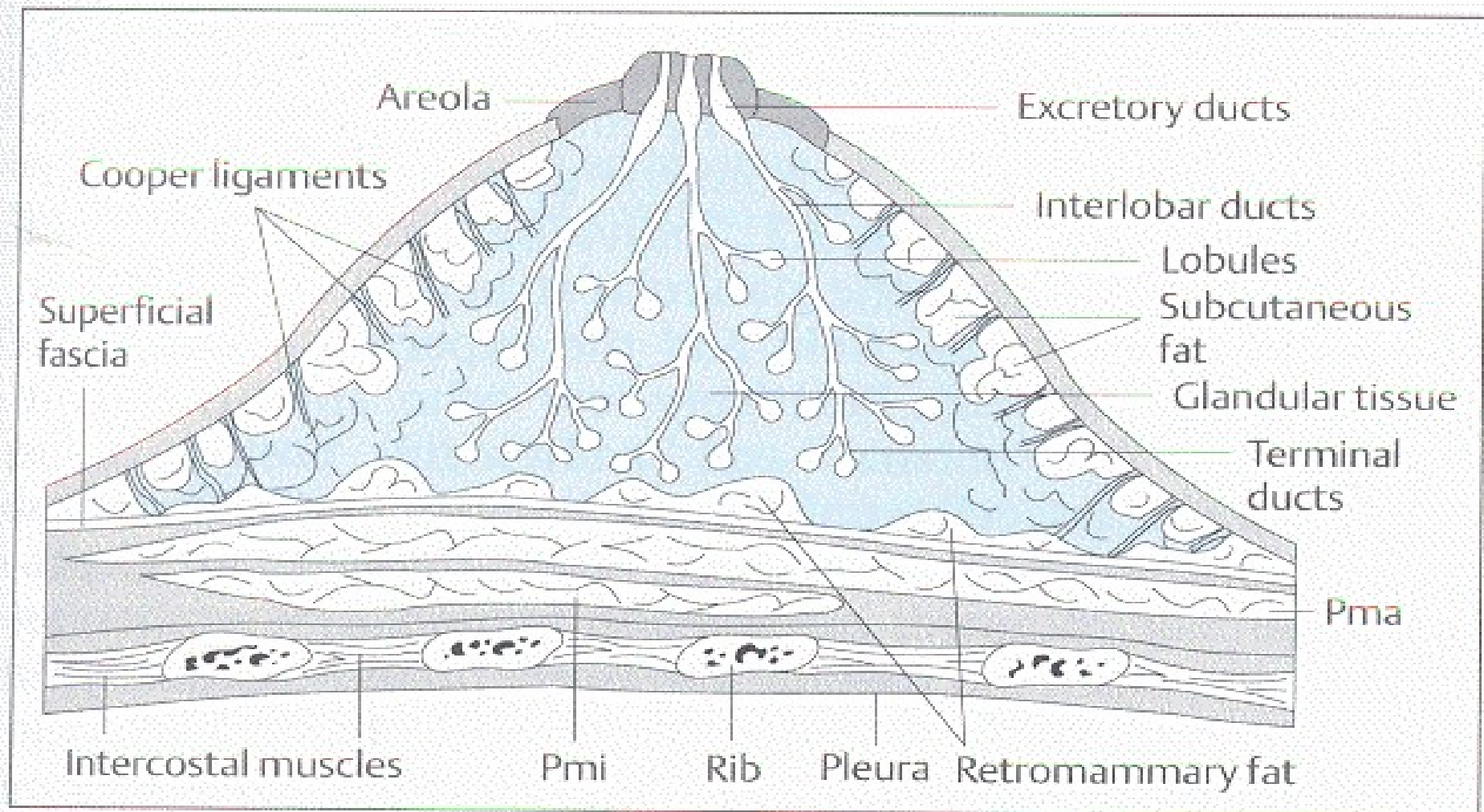
G chest wall/rib cage

Enlargement:

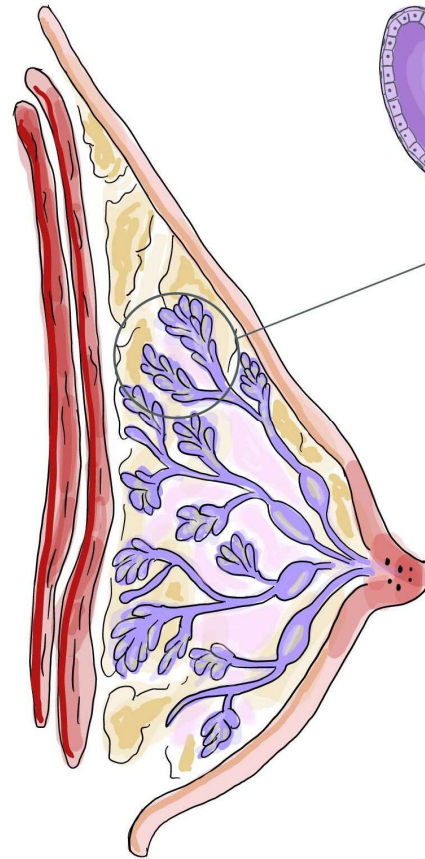
A normal duct cells

B basement membrane

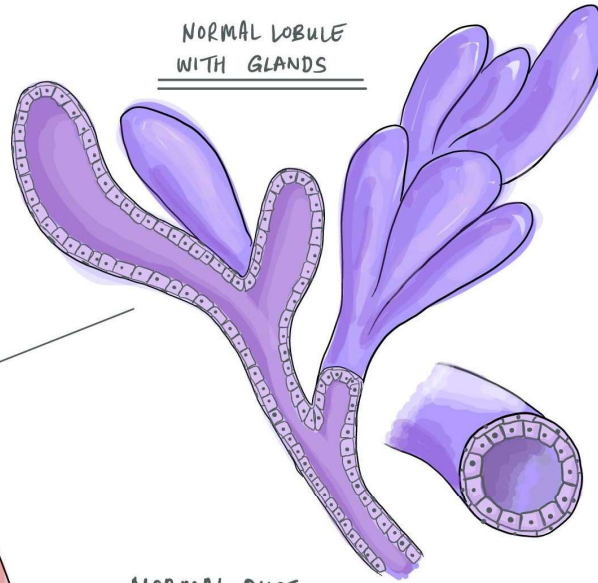
C lumen (center of duct)



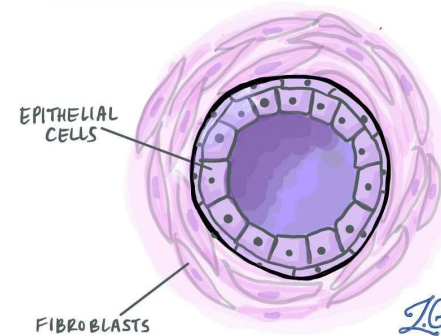
BREAST ANATOMY



NORMAL LOBULE WITH GLANDS



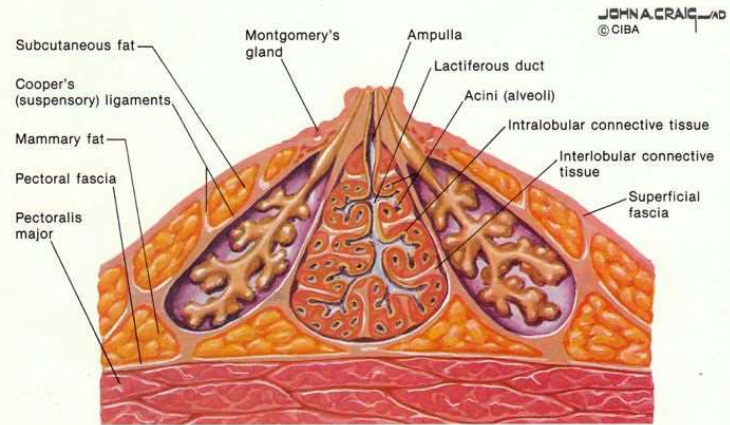
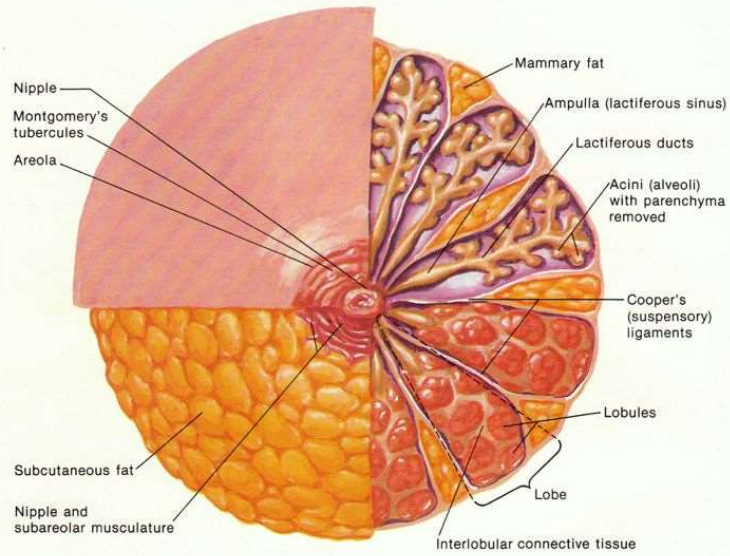
NORMAL DUCT WITH STROMA



EPITHELIAL
CELLS

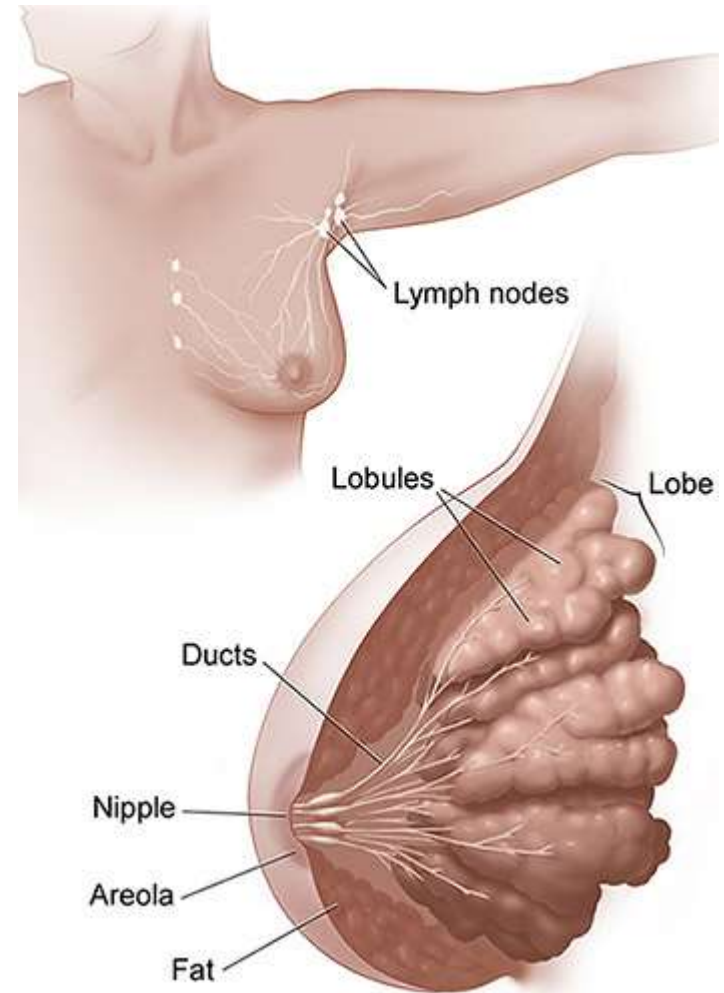
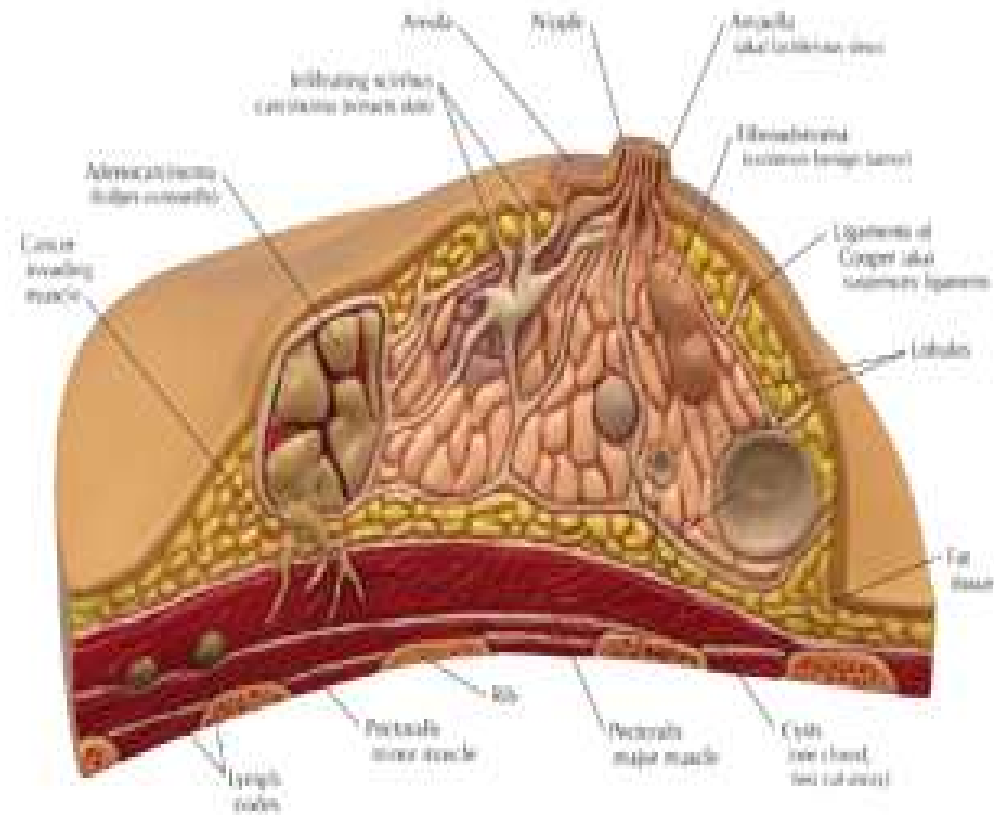
FIBROBLASTS

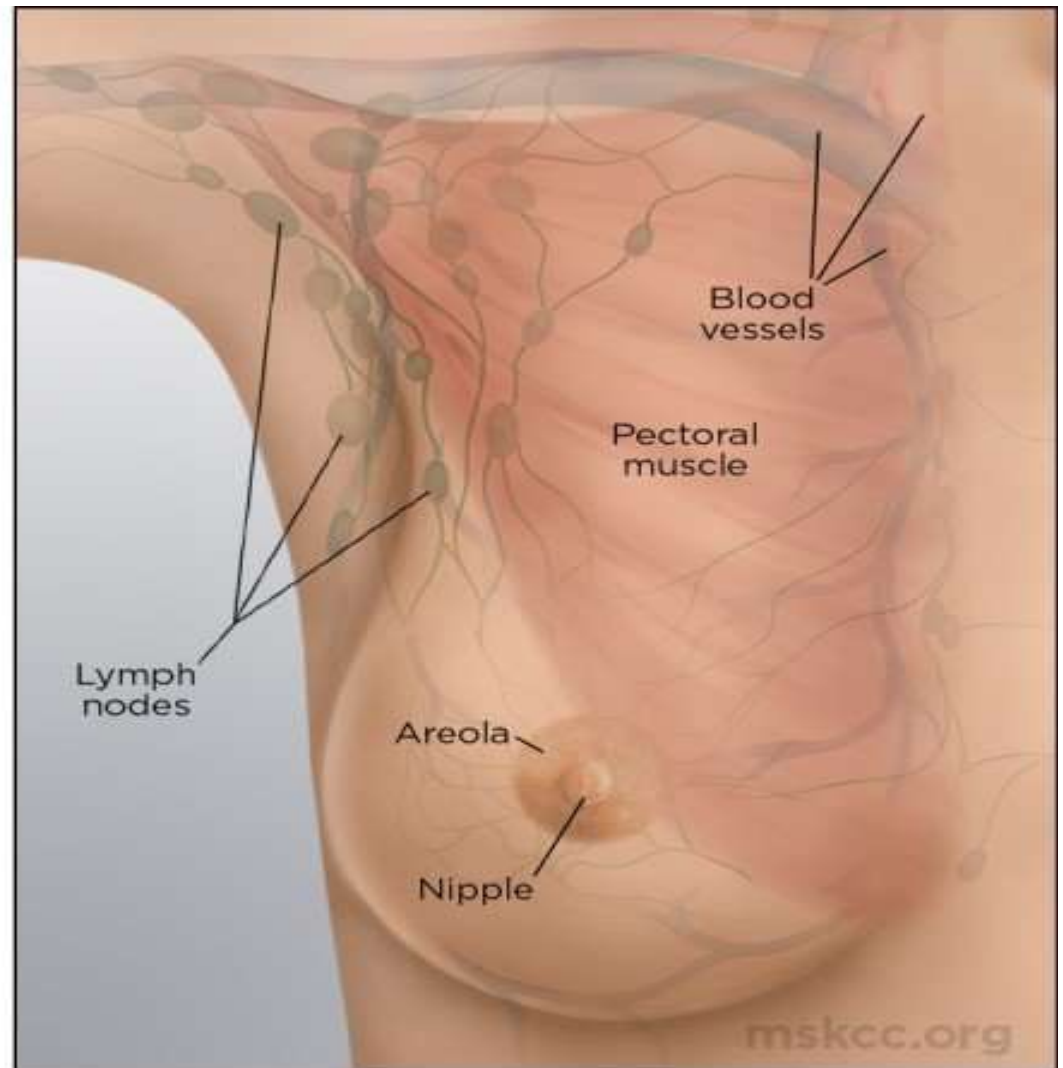
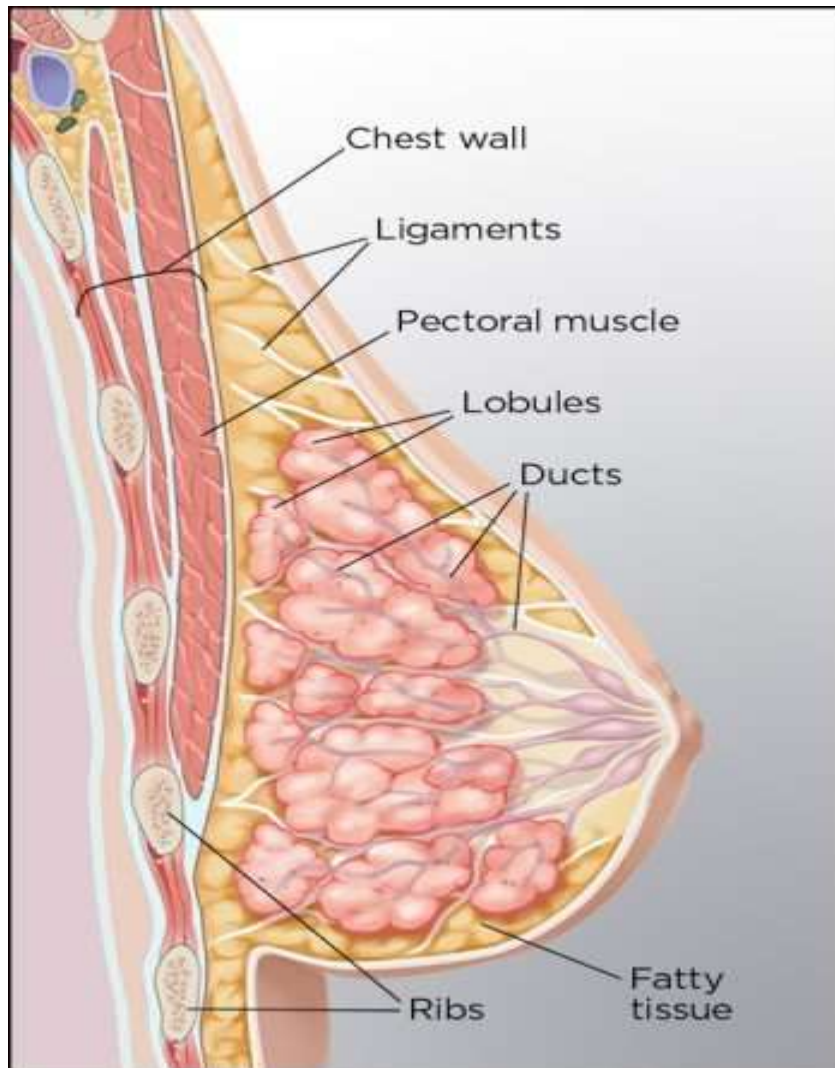
Anatomy of the Breast



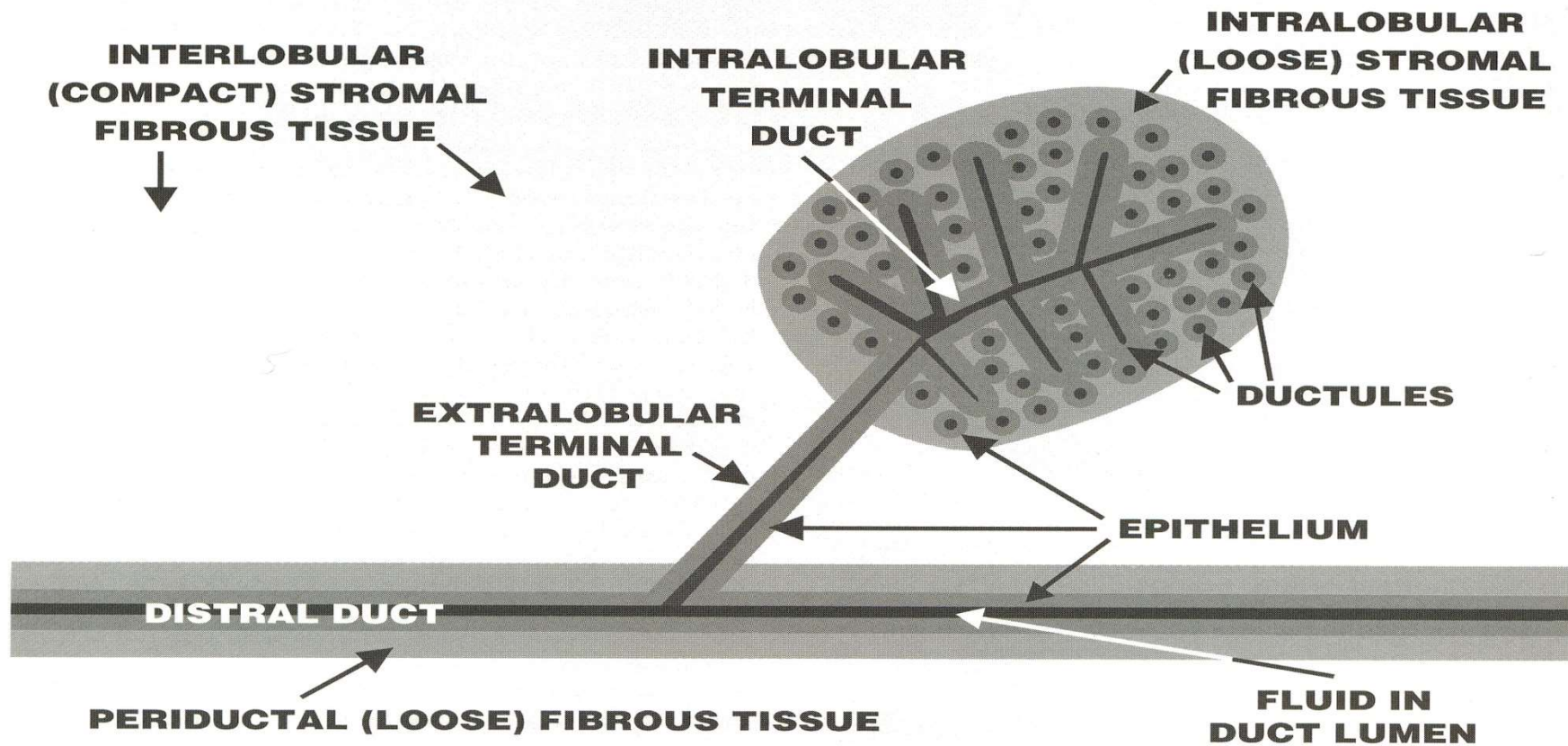
BREAST

Common Pathologies





Anatomy

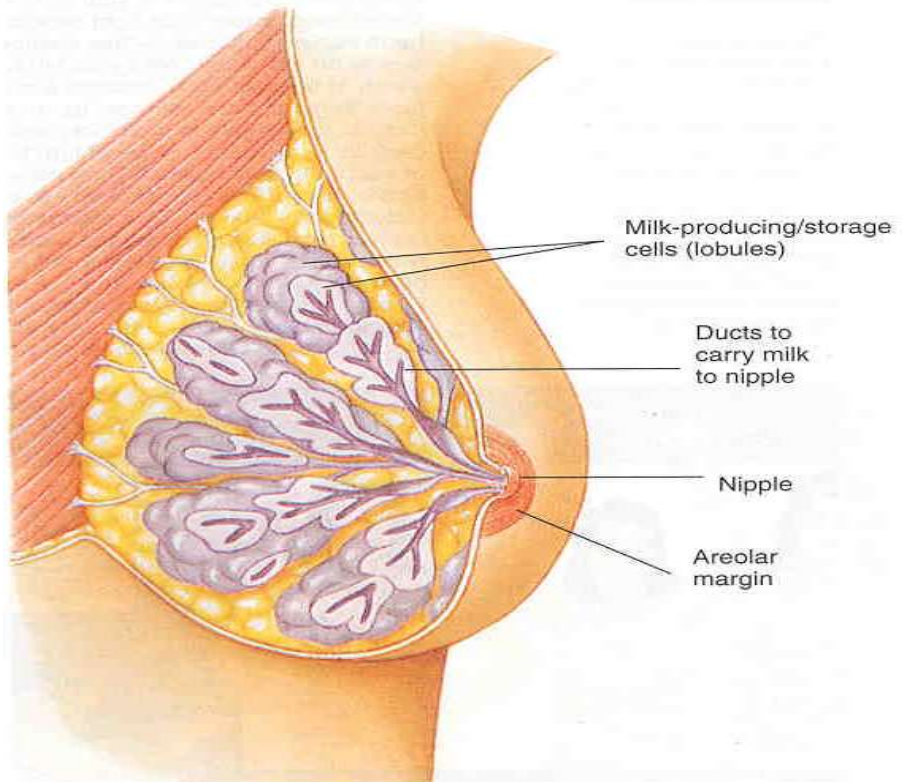


DEEP RELATION

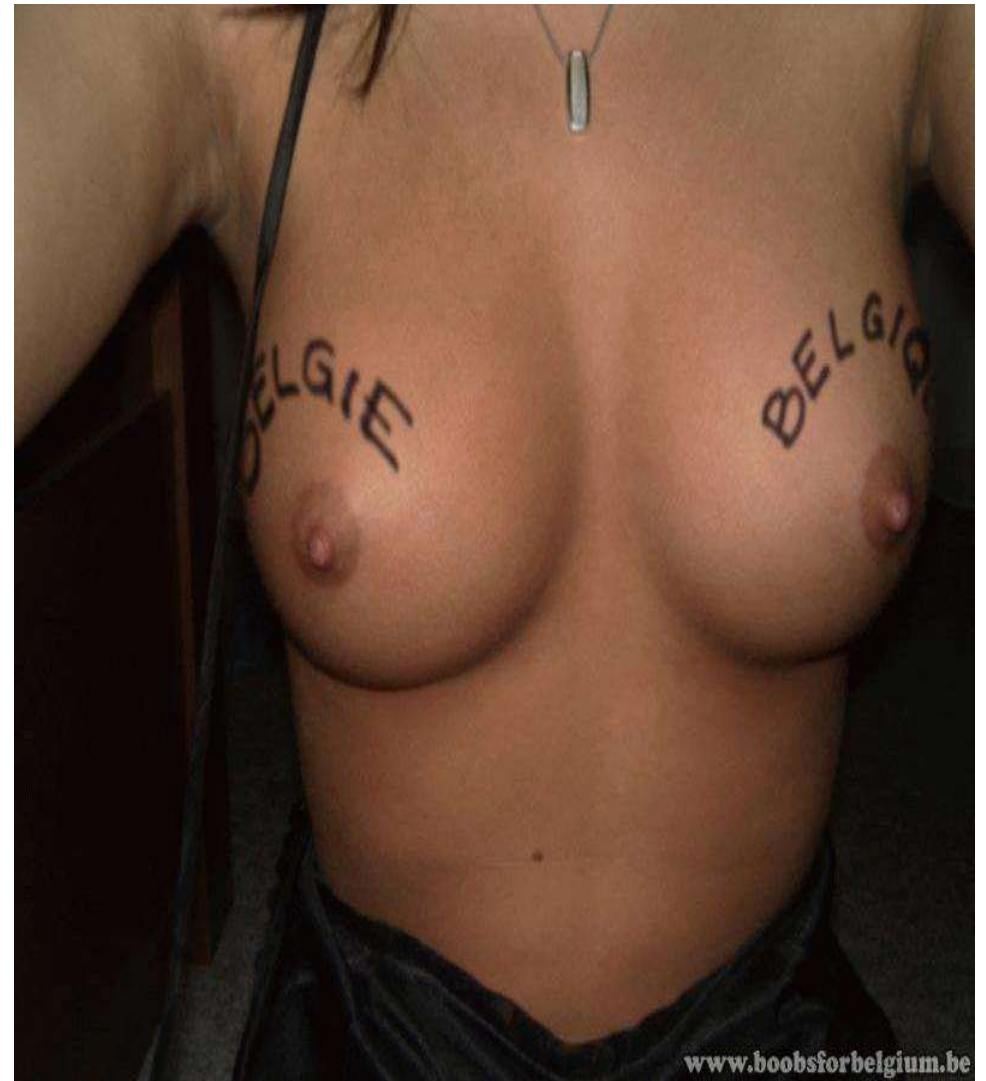
- Breast rests on
 - fascia of pectoralis major ms
 - serratus anterior
 - ext. oblique abdominis muscle
 - upper extent of rectus sheath
- Retromammary bursa identified on posterior aspect of breast between investing fascia of breast & fascia of pectoralis ms.
- LIGAMENTS OF COOPER-The breast is anchored to the overlying skin & to the underlying pectoral fascia by bands of connective tissue.

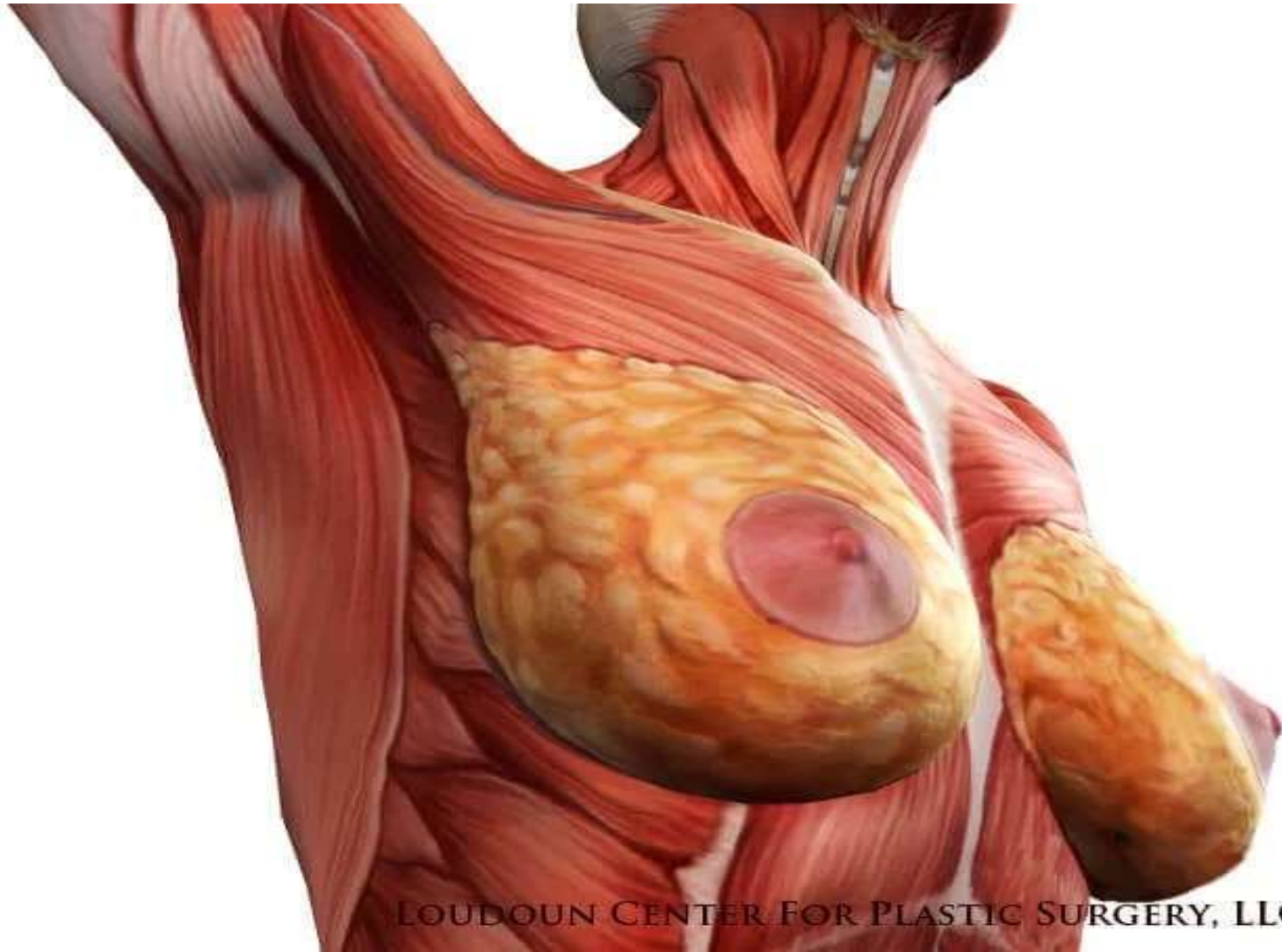
ARCHITECTURE OF GLAND

- Acini -> lobules -> lobes
- Lobes arranged in radiating pattern & converge on nipple
- Each lobe is drained by a duct.
- 10 to 15 ducts open into nipple
- Ducts surrounded by loose connective tissue,& fat gives roundness.
- Larger ducts usually give rise to duct papilloma n duct ectasia.
- Distal smaller ducts rise to fibroadenoma (during development)
- Cyst formation & sclerosing adenosis (involutional period)
- Cancer intralobular portion of terminal ducts

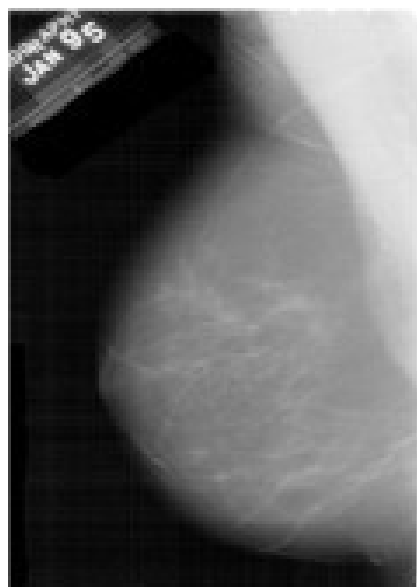


17

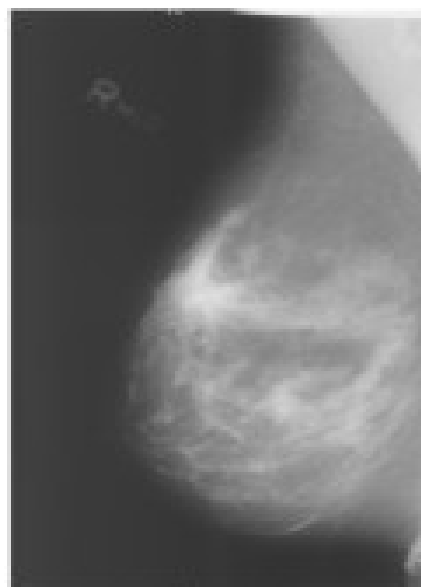




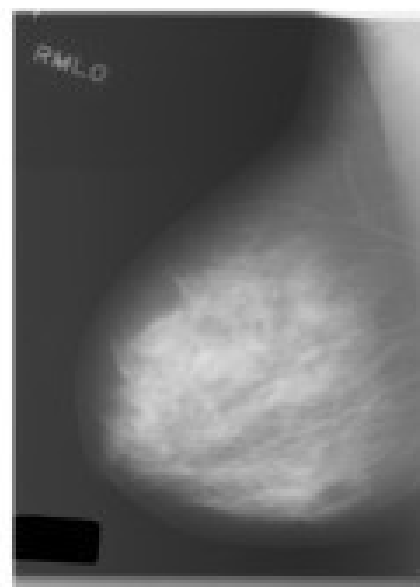
LOUDOUN CENTER FOR PLASTIC SURGERY, LLC



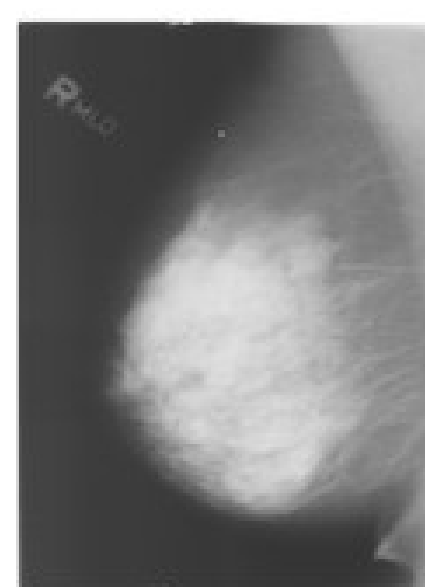
A_1943_1.LEFT_MLO
Density class: B1



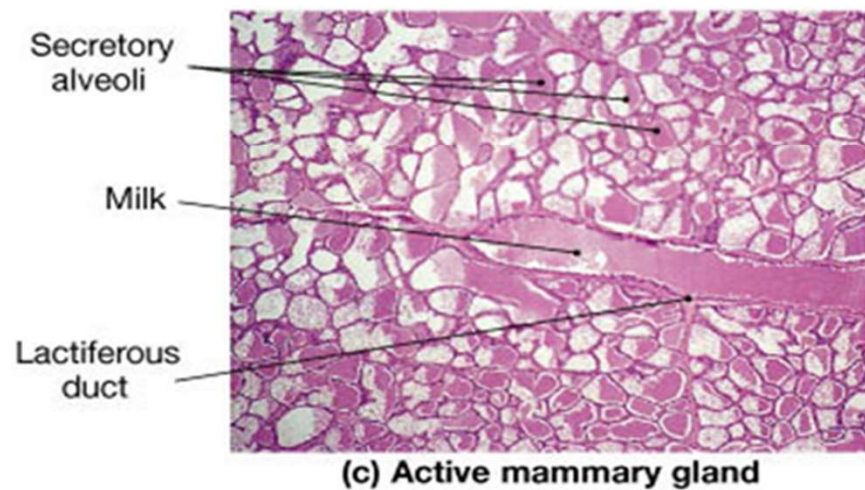
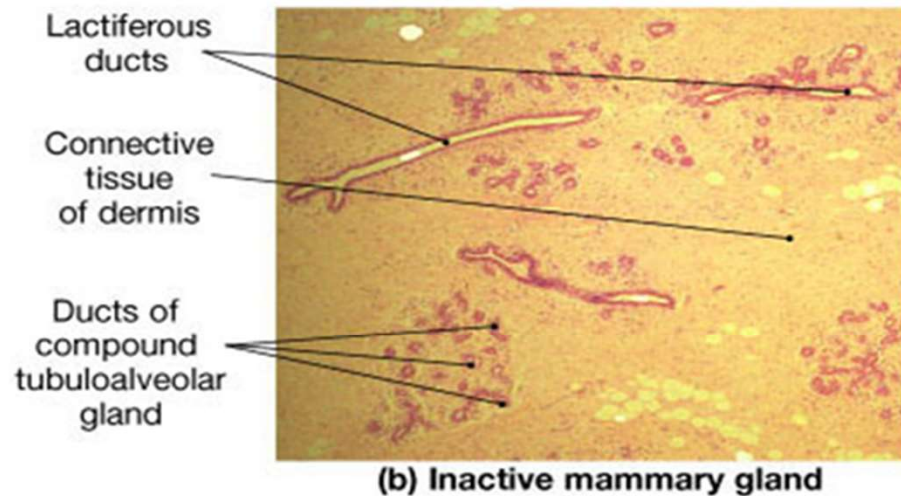
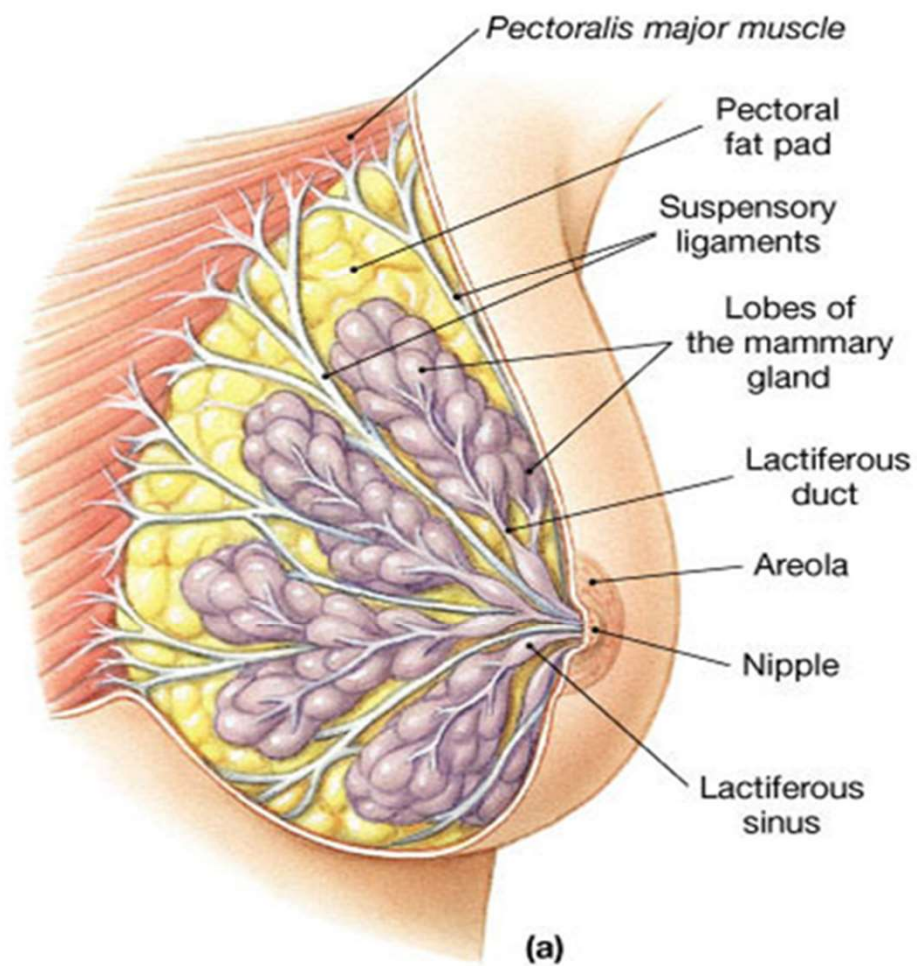
B_3366_1.RIGHT_MLO
Density class: B2



C_0243_1.RIGHT_MLO
Density class: B3



B_3175_1.RIGHT_MLO
Density class: B4



Milk Produced



Colostrum is the special milk that is secreted in the first 2–3 days after delivery.

Colostrum is rich in white cells and antibodies, especially sIgA, and it contains a larger percentage of protein, minerals and fat-soluble vitamins (A, E and K) than later milk

Breast milk contains about 3.5 g of fat per 100 ml of milk, which provides about one half of the energy content of the milk.

Breast milk contains about 7 g lactose per 100 ml, which is more than in most other milks, and is another important source of energy.

There are two hormones that directly affect breastfeeding: *prolactin* and *oxytocin*.

Signs of an active oxytocin reflex

Mothers may notice signs that show that the oxytocin reflex is active:

- a tingling sensation in the breast before or during a feed;
- milk flowing from her breasts when she thinks of the baby or hears him crying;
- milk flowing from the other breast when the baby is suckling;
- milk flowing from the breast in streams if suckling is interrupted;
- slow deep sucks and swallowing by the baby, which show that milk is flowing into his mouth
- uterine pain or a flow of blood from the uterus
- thirst during a feed.

In humans, oxytocin induces a state of calm, and reduces stress

It may enhance feelings of affection between mother and child, and promote bonding.

Pleasant forms of touch stimulate the secretion of oxytocin, and also prolactin, and skin-to-skin contact between mother and baby after delivery helps both breastfeeding and emotional bonding

Suckling affects the release of other pituitary hormones, including

- *gonadotrophin releasing hormone (GnRH)*,
- **follicle stimulating hormone,**
- **luteinising hormone,**

which results in suppression of ovulation and menstruation.

Therefore, frequent breastfeeding can help to delay a new pregnancy

Breastfeeding at night is important to ensure this effect.



The concentration of protein in breast milk (0.9 g per 100 ml) is lower than in animal milks

The much higher protein in animal milks can overload the infant's immature kidneys with waste nitrogen products. Breast milk contains less of the protein casein,

Breast milk normally contains sufficient vitamins for an infant, unless the mother herself is deficient. The exception is vitamin D.

Breast milk contains many factors that help to protect an infant against infection (8) including:

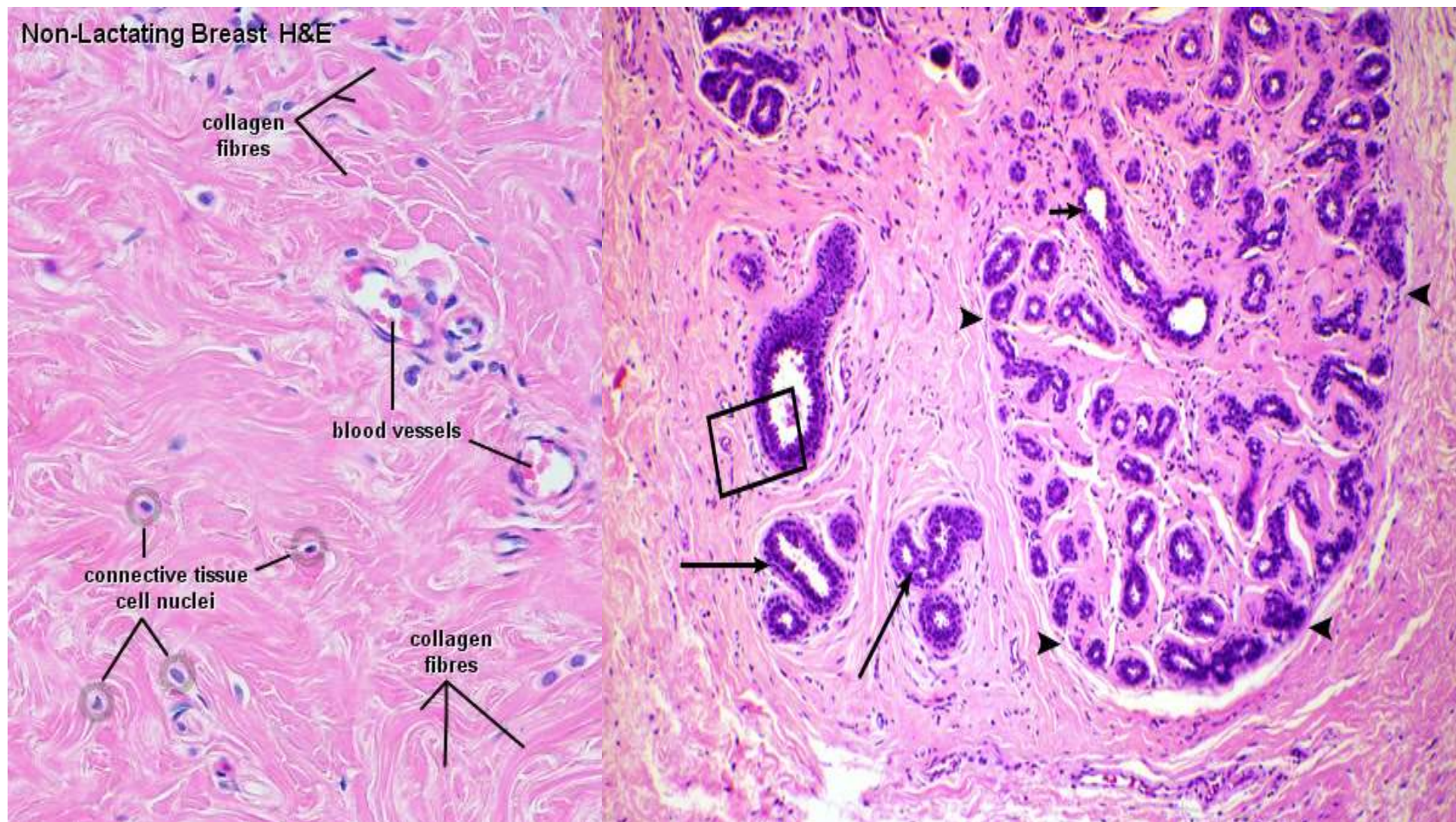
- immunoglobulin, principally secretory immunoglobulin A (sIgA), which coats the intestinal mucosa and prevents bacteria from entering the cells;
- white blood cells which can kill micro-organisms;
- whey proteins (lysozyme and lactoferrin) which can kill bacteria, viruses and fungi;
- oligosaccharides which prevent bacteria from attaching to mucosal surfaces.

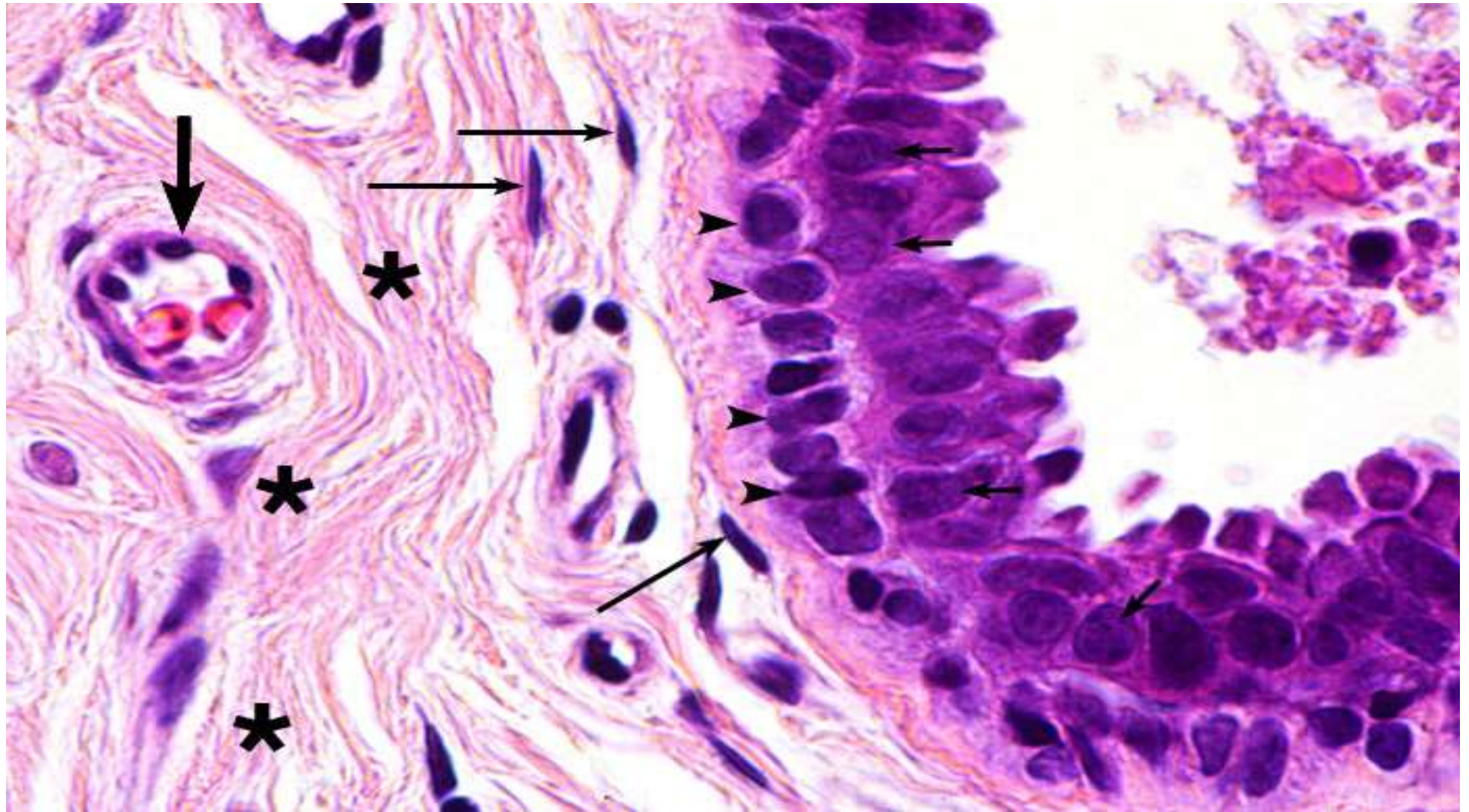
Other bioactive factors

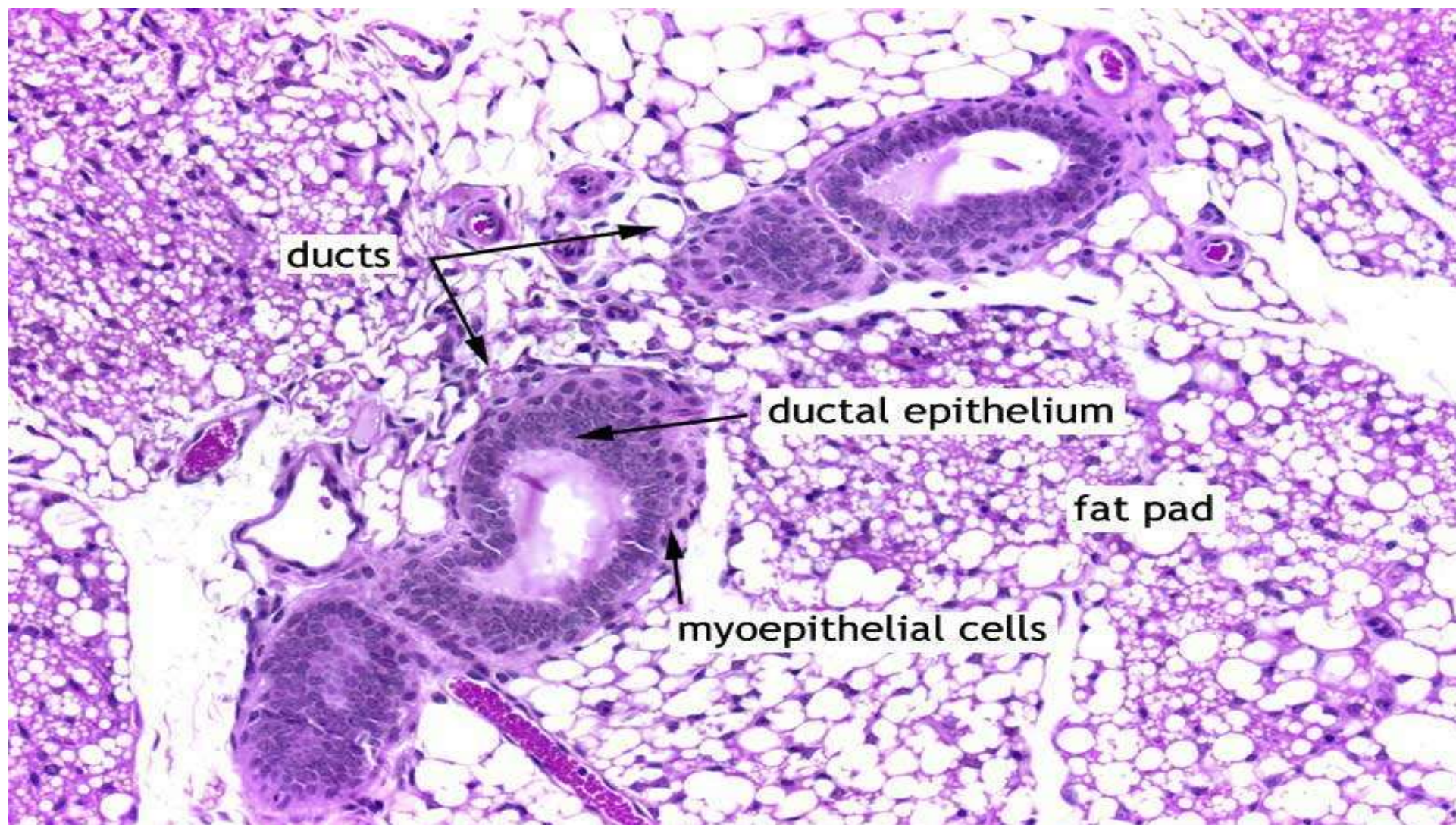
Bile-salt stimulated lipase facilitates the complete digestion of fat once the milk has reached the small intestine Fat in artificial milks is less completely digested

.
Epidermal growth factor **stimulates maturation of the lining of the infant's intestine**, so that it is better able to digest and absorb nutrients, and is less easily infected or sensitised to foreign proteins. It has been suggested that other growth factors present in human milk target the development and maturation of nerves and retina

Non-Lactating Breast H&E

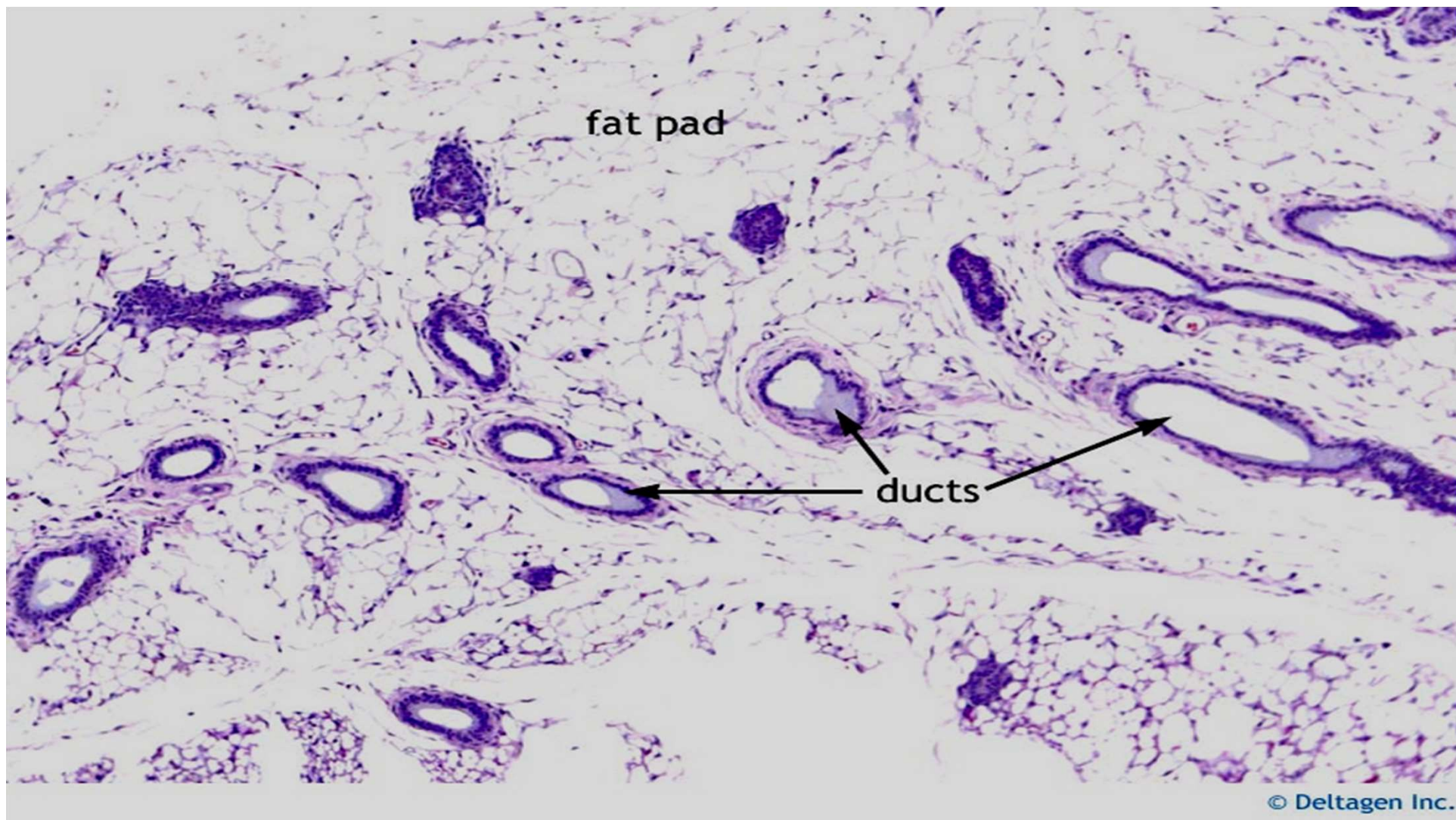


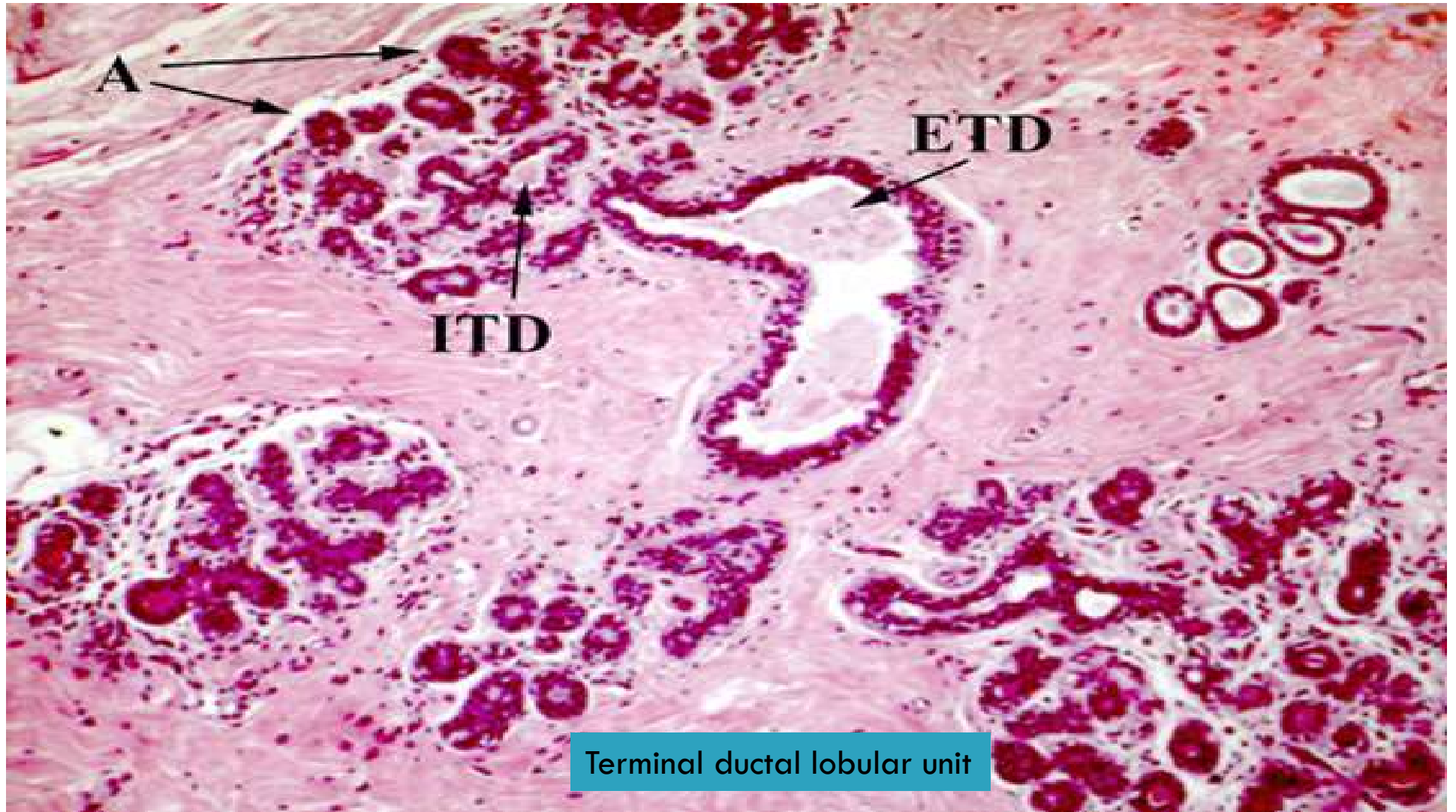


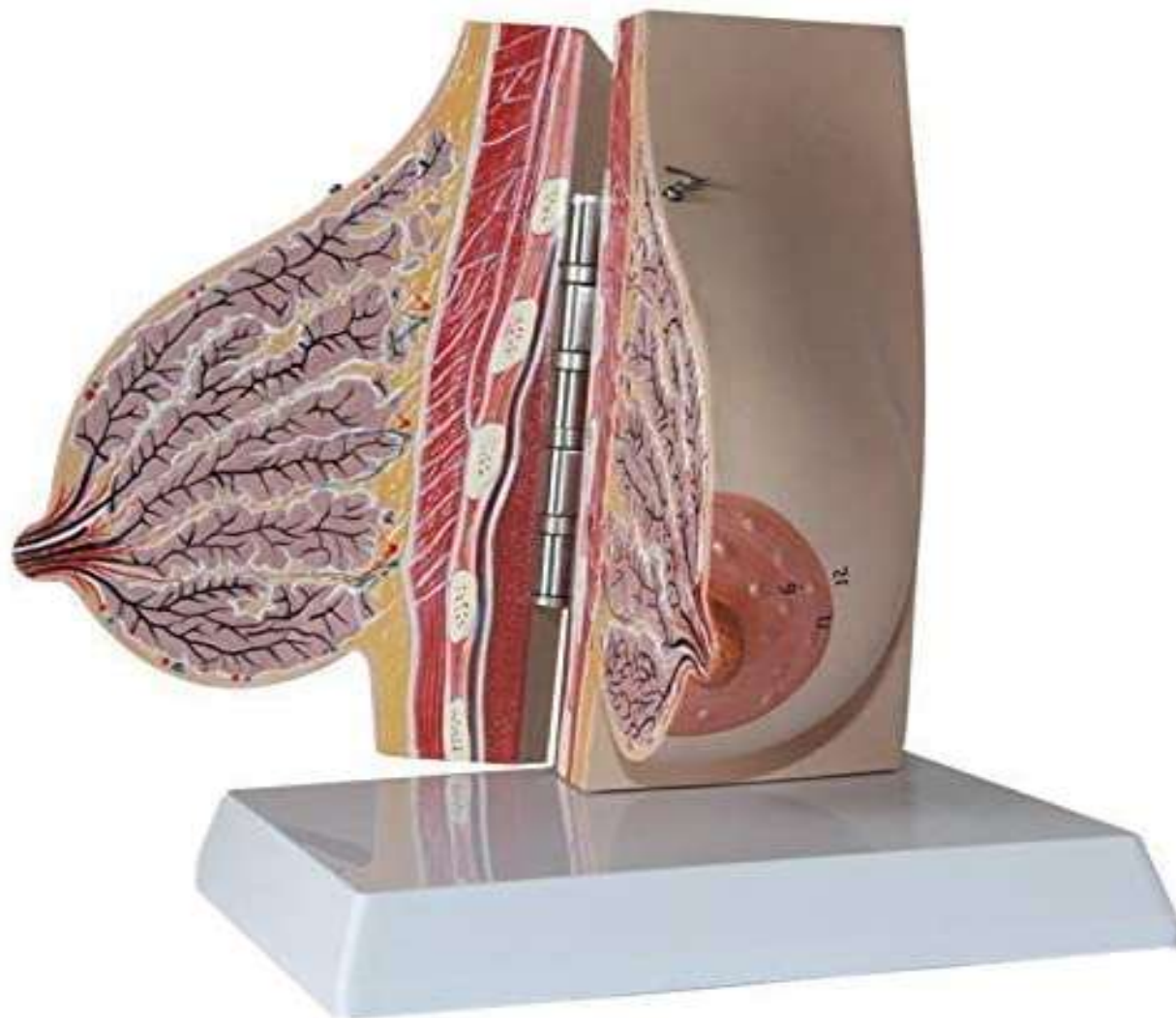


fat pad

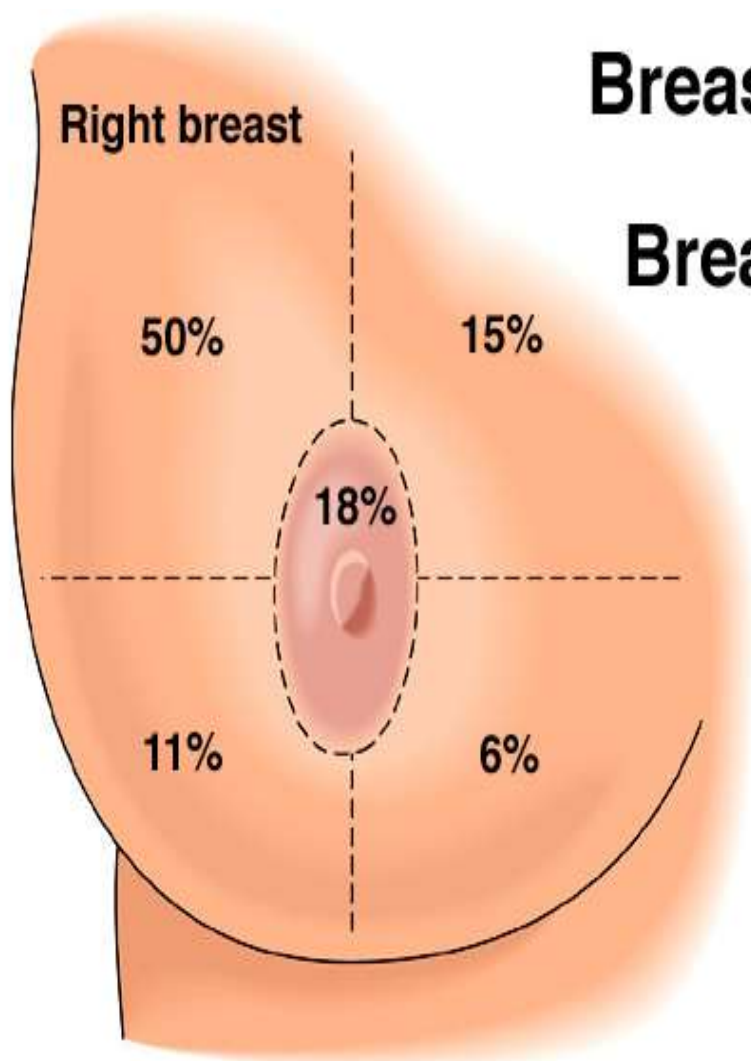
ducts







Breast Quadrants and Breast Cancers



NIPPLE AREOLA COMPLEX

Epidermis – pigmented. More darker with physiological changes

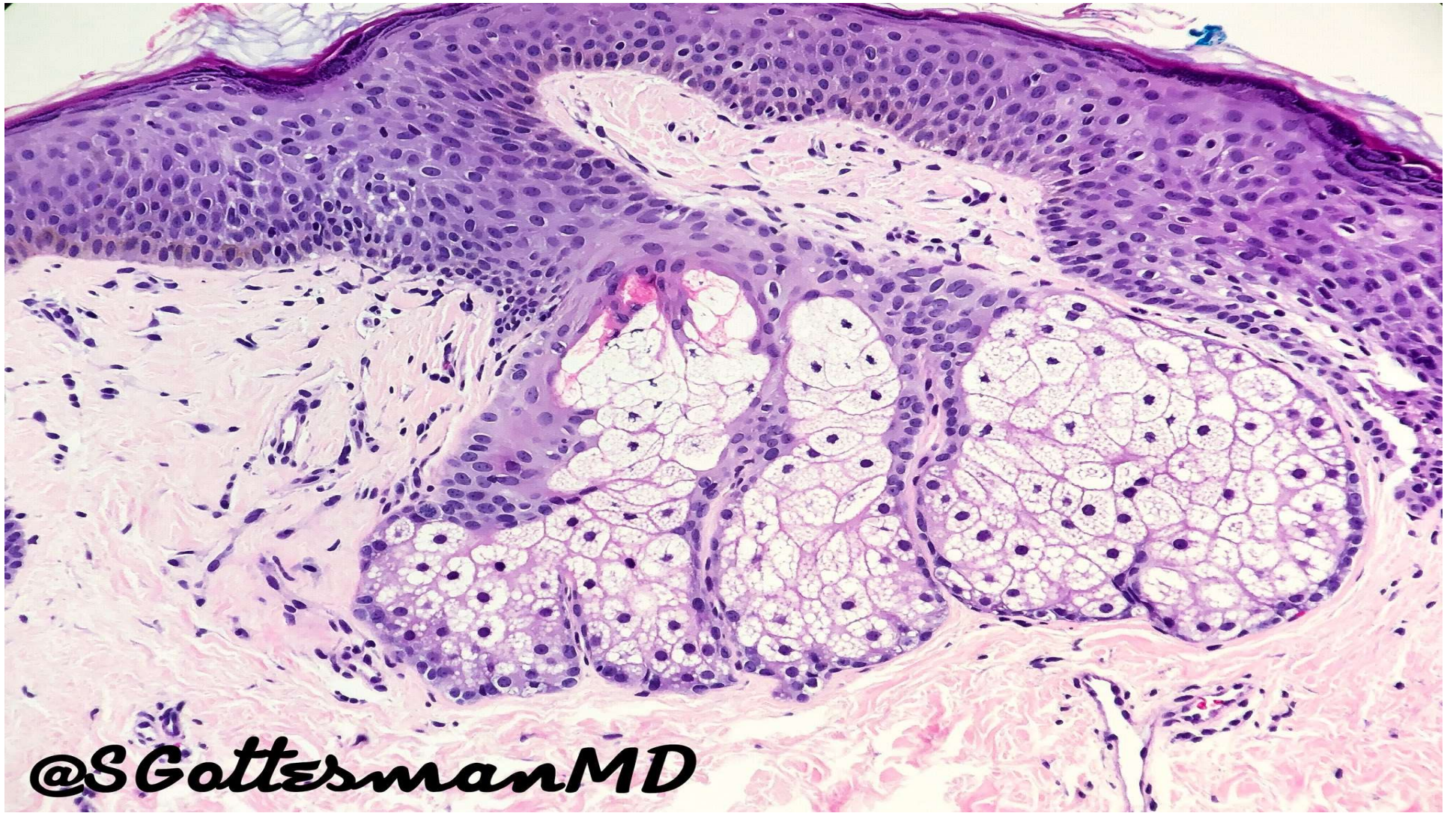
Areola-sebaceous, sweat, & accessory glands. produce small elevations (**MONTGOMERY TUBERCLE**)



Montgomery's glands, are sebaceous glands in the areola.

They produce an oil-like substance that makes it easier for the breast tissue to deal with the hard sucking on the breasts that the newborn will do.





@SGottesmanMD

BLOOD SUPPLY

-ARTERIAL

1. perforating br of internal thoracic/mammary artery
2. lateral branches of posterior intercostal arteries
3. branches from axillary artery
 - superior thoracic
 - lateral thoracic
 - pectoral branch of thoracoacromial artery

VENOUS DRAIN

- 1- perforating br of internal thoracic vein
 - 2- perforating br of posterior intercostal vein
 - 3- tributaries of axillary vein
- (MONDORS DISEASE)

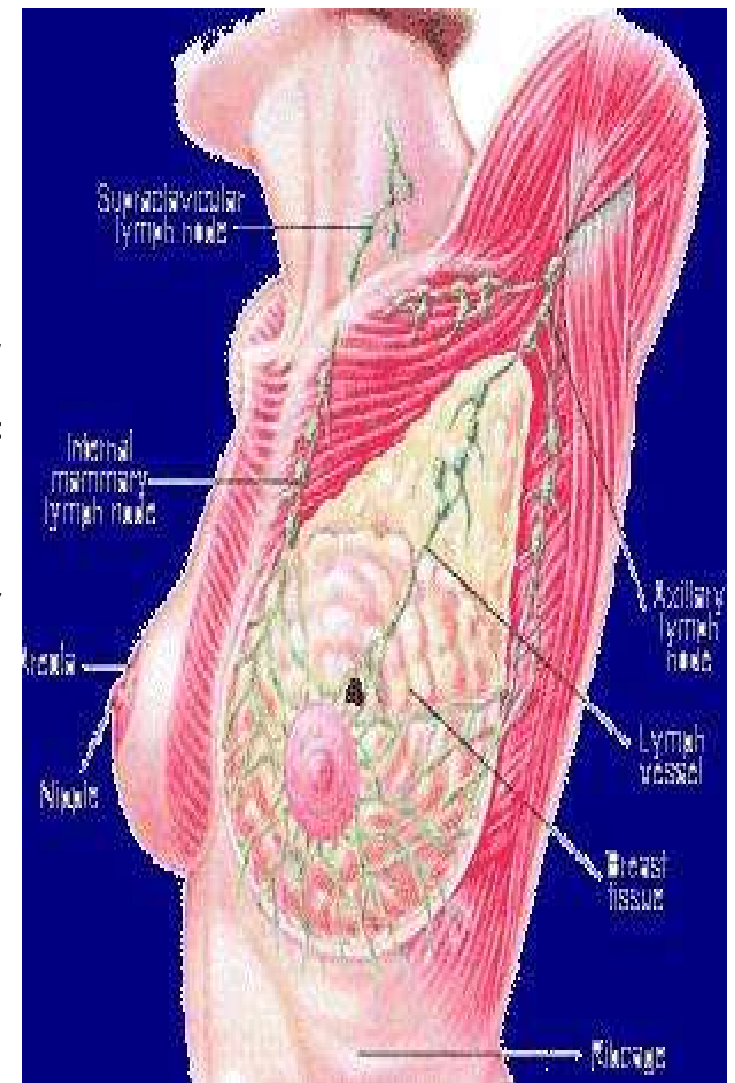
NERVE SUPPLY

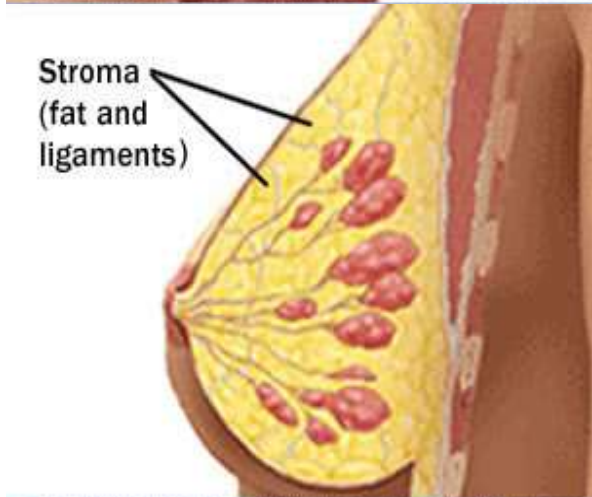
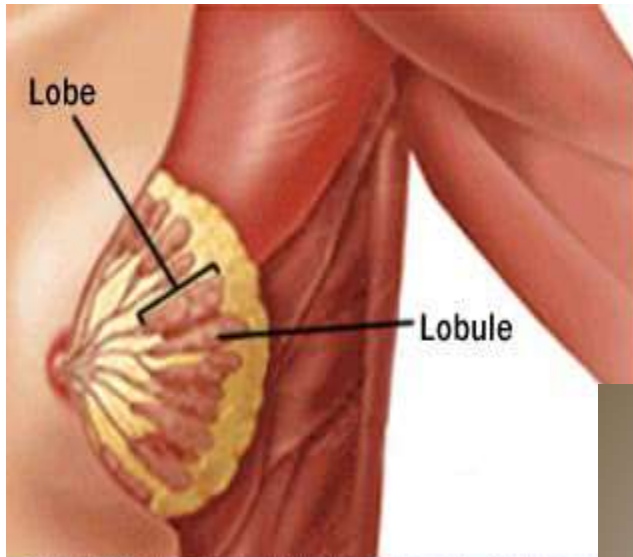
- Sympathetic nerves which reach via 2nd to 6th intercostal nerves
- Overlying skin supplied ant & lateral br of 4th 5th 6th intercostal nerves

LYMPHATIC DRAINAGE

□ Divided into SIX GROUPS

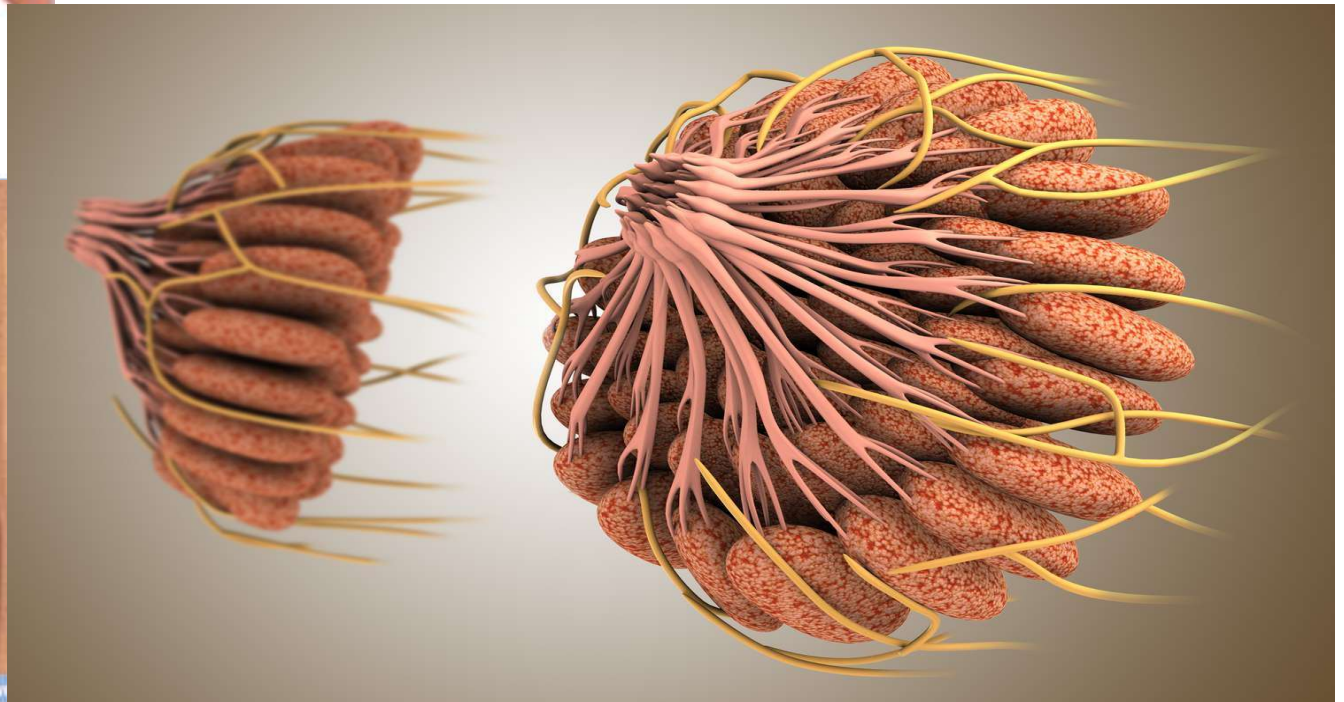
- 1- axillary(lateral) vein group
- 2- external mammary group(anterior or pectoral) along lower border of pectoralis minor and in relation with lateral thoracic vessels
- 3- scapular group(posterior or subscapular) along subscapular vessels
- 4- central group
- 5- apical/subclavicular
- 6- interpectoral(Rotters node)



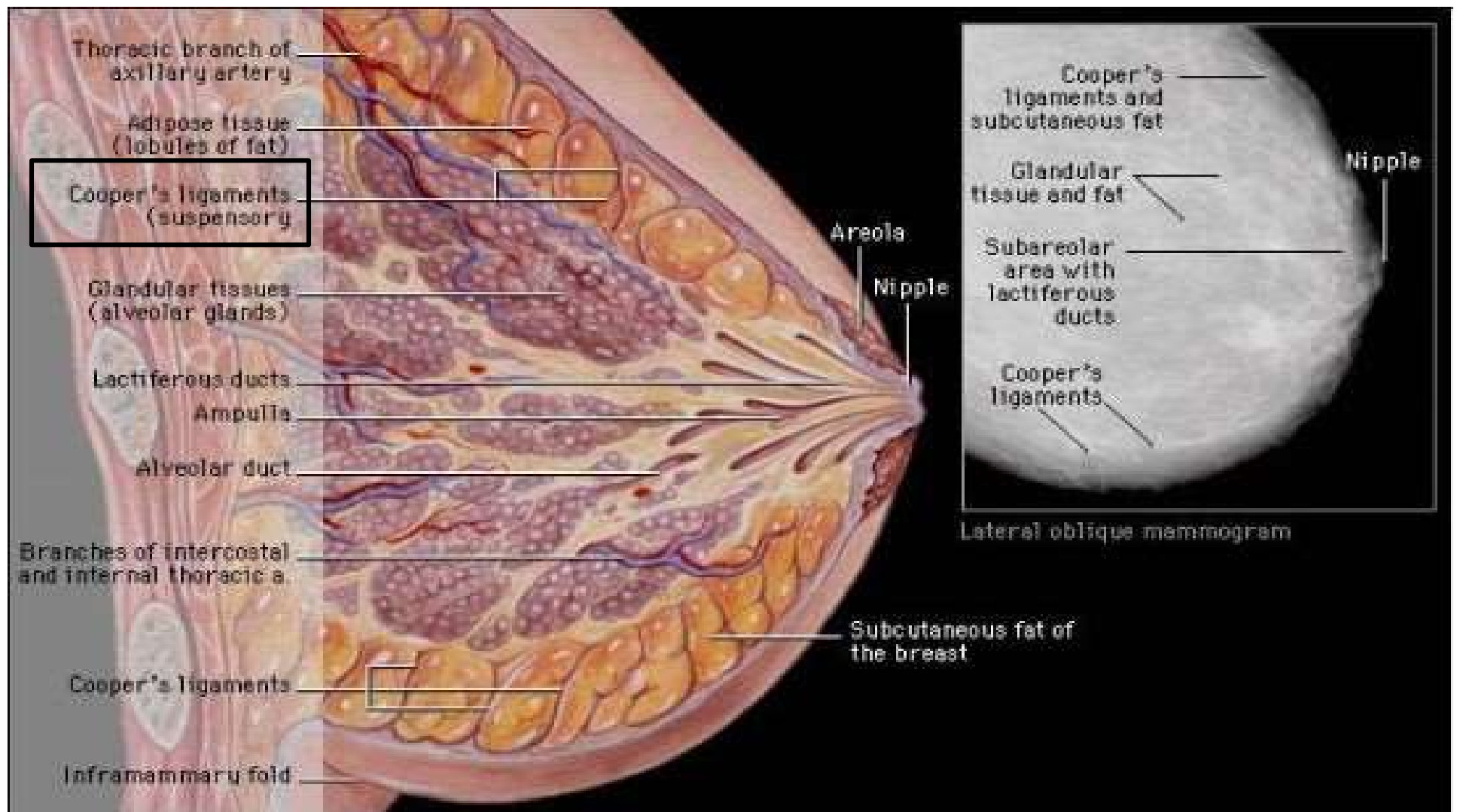


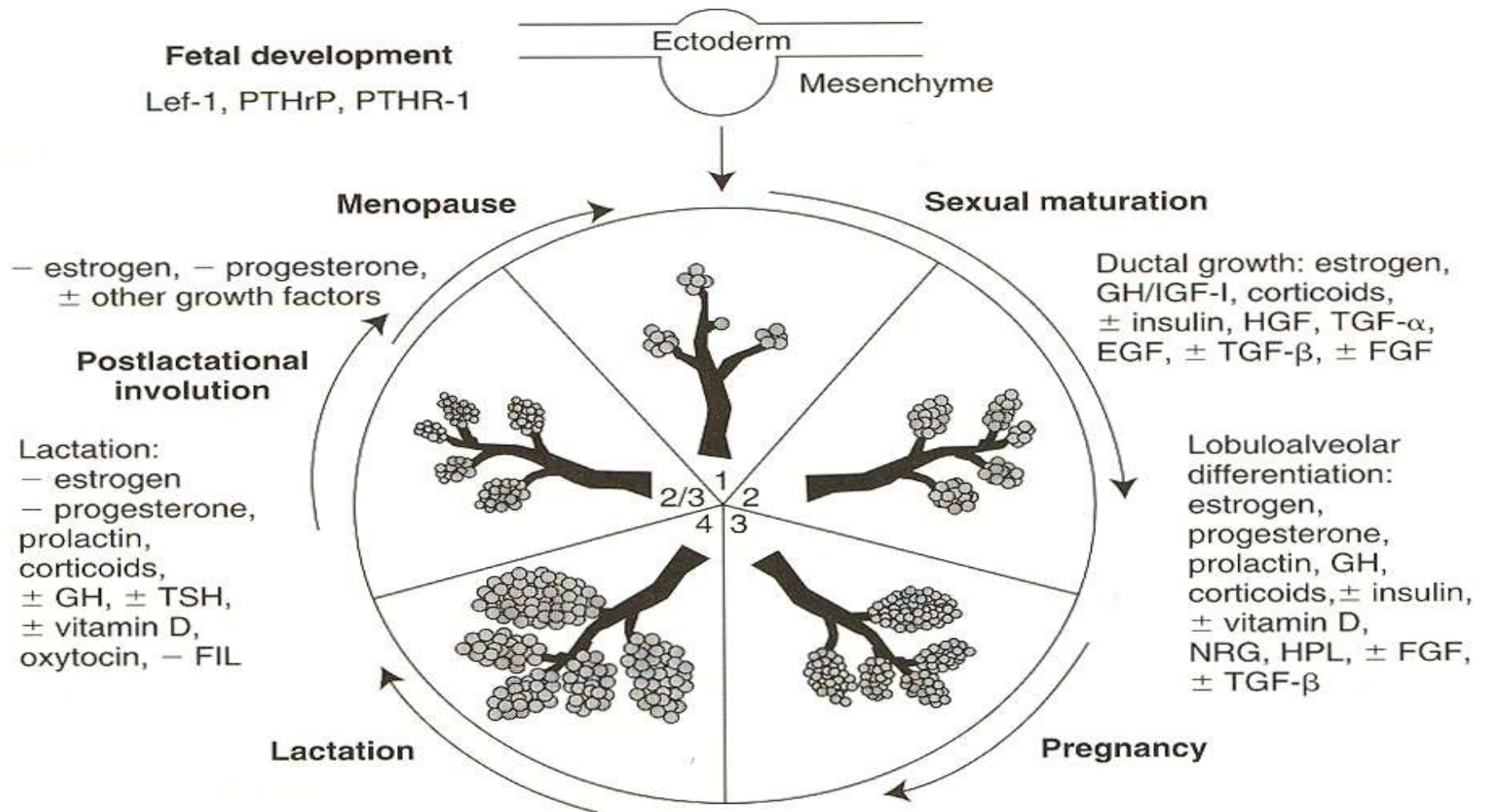
Cooper's ligament /suspensory ligament of cooper

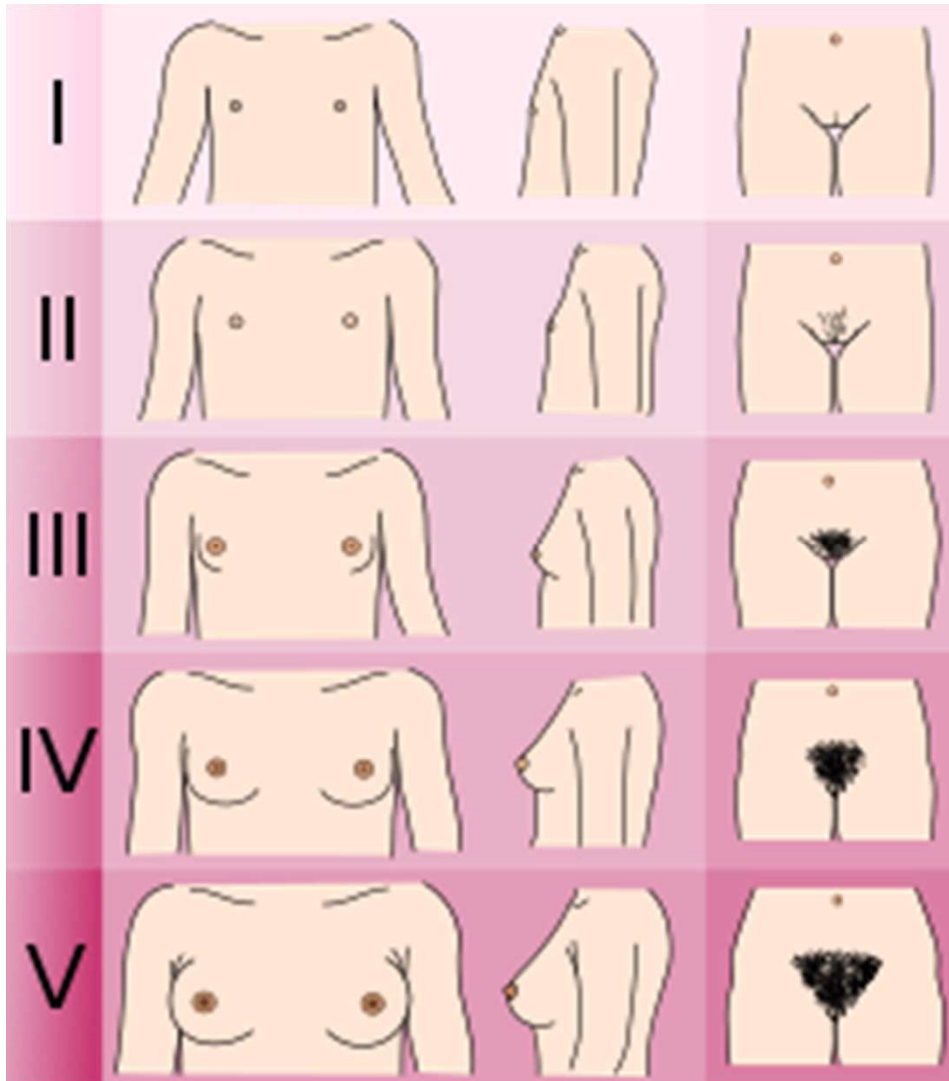
Triangular, vertical ligaments in the breast that attach deeper layers of subcutaneous tissue to the skin.
Breast sag occurs when these ligaments begin to lose strength and tension.



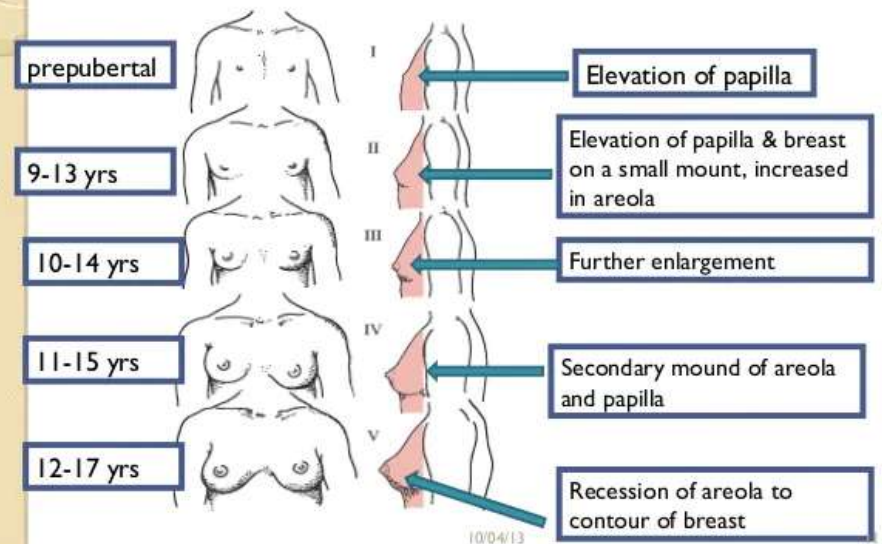


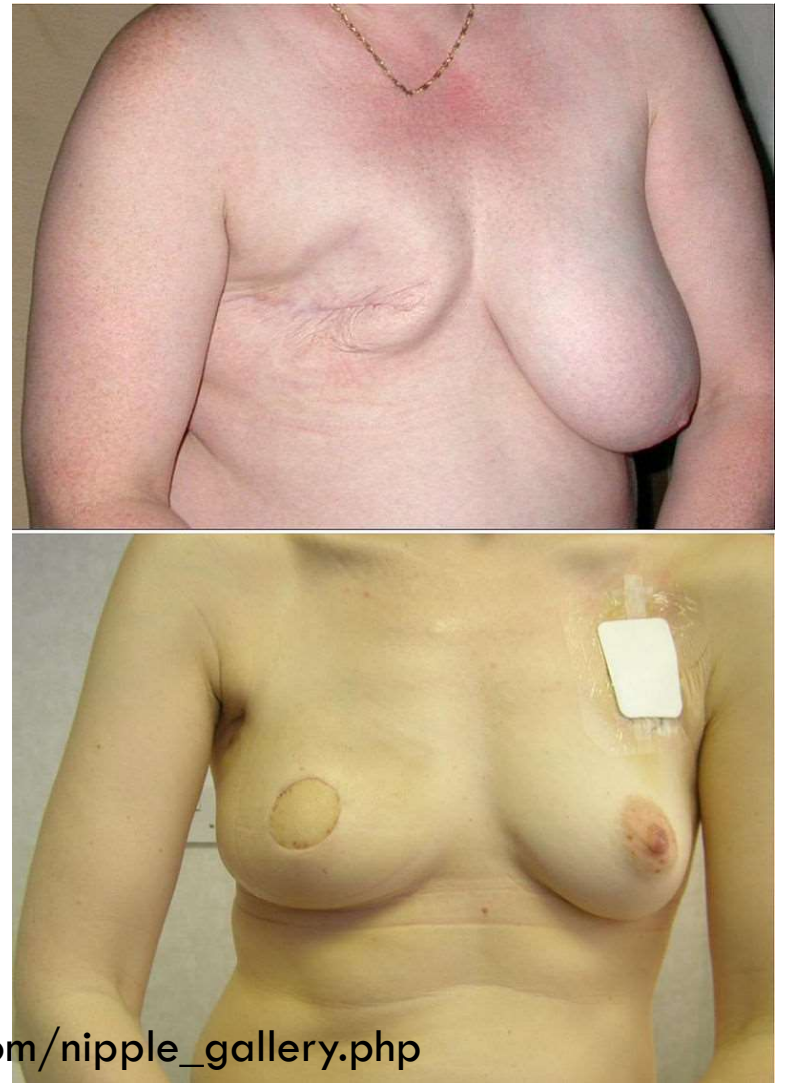
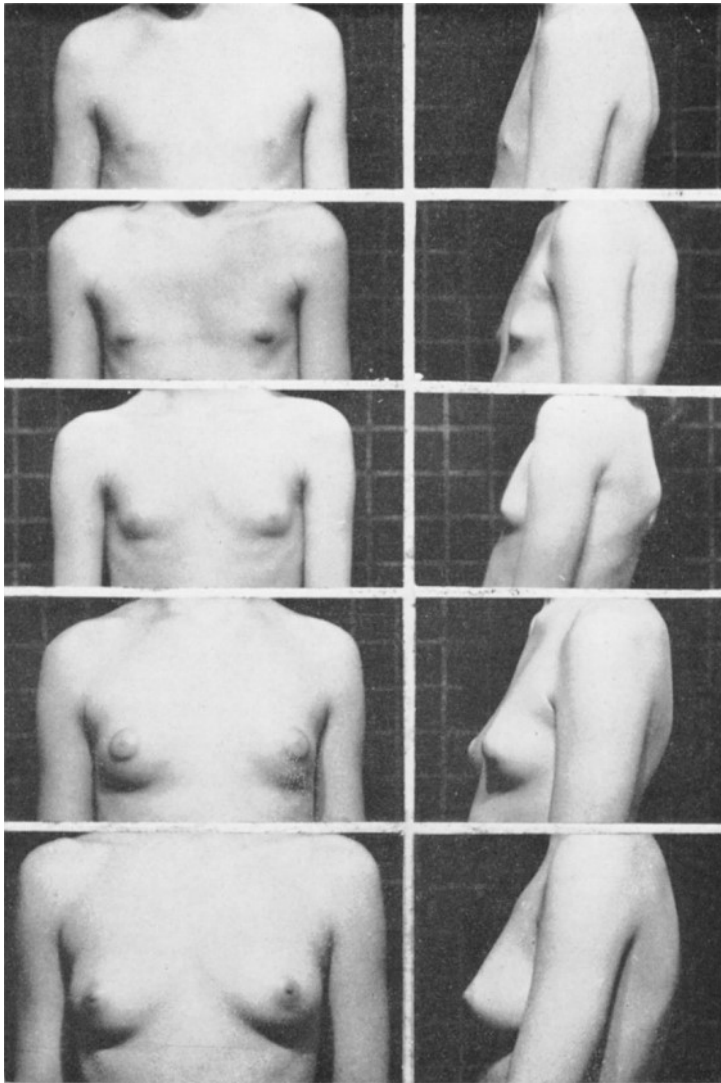






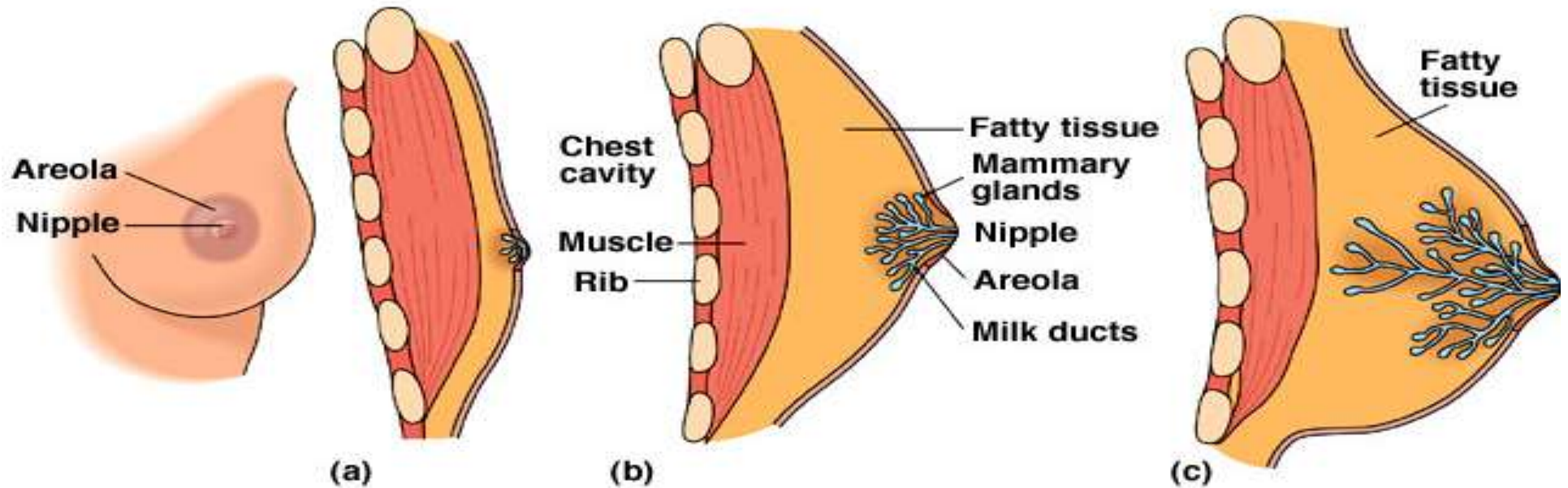
Tanner staging of breast development — Marshall and Tanner (1969)





https://www.007b.com/nipple_gallery.php

Female Breast at Various Ages



Puberty Morphology

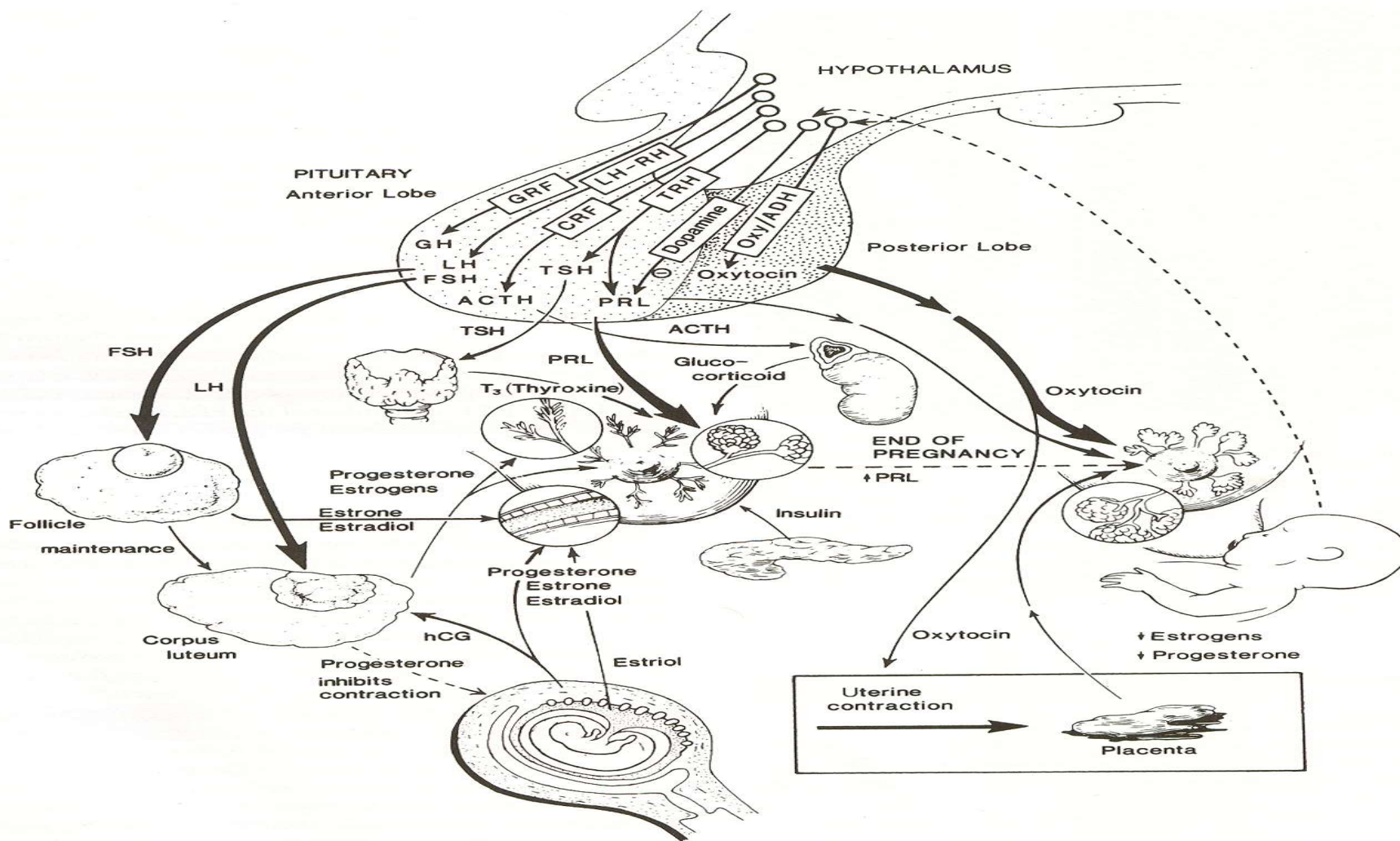
- ❑ Thelarche: the beginning of adult breast development
- ❑ Ductal growth phase: Club-shaped terminal end buds (TEBs)
- ❑ Lobuloalveolar phase: TEBs form alveolar buds. 9-10 alveolar buds empty into terminal ductal lobular units (TDLUs)
- ❑ In early puberty, the TDLU is termed

Puberty Morphology

- Under cyclic influence of ovarian hormones: some of the Lob1 will undergo further division and differentiate into a lobule type 2 (Lob 2).
- In Lob 2 the alveolar buds become smaller but four times more numerous than Lob1; these buds are termed ductules or alveoli.
- Lobs during late teens but then decline after the mid twenties.

Puberty menstrual cycle

- Early follicular phase: Day 3-7. dense stroma, only one epithelial type. Minimum volume in 5-7 days.
- Follicular phase: Day 8-14, progression of epithelial in to three cell type: luminal , myoeπιethelial and intermediate cell.
- Ovulation: Increase alveoli volume and number.
- Secretory phase: Day 21-27, maximum size of the lobules
- Menstrual phase: Day 28-32



Pregnancy

- diminution of fibrous stroma
- lobular hyperplasia
- Hormones active are est prog & prolactin

Lactation - prolactin & oxytocin

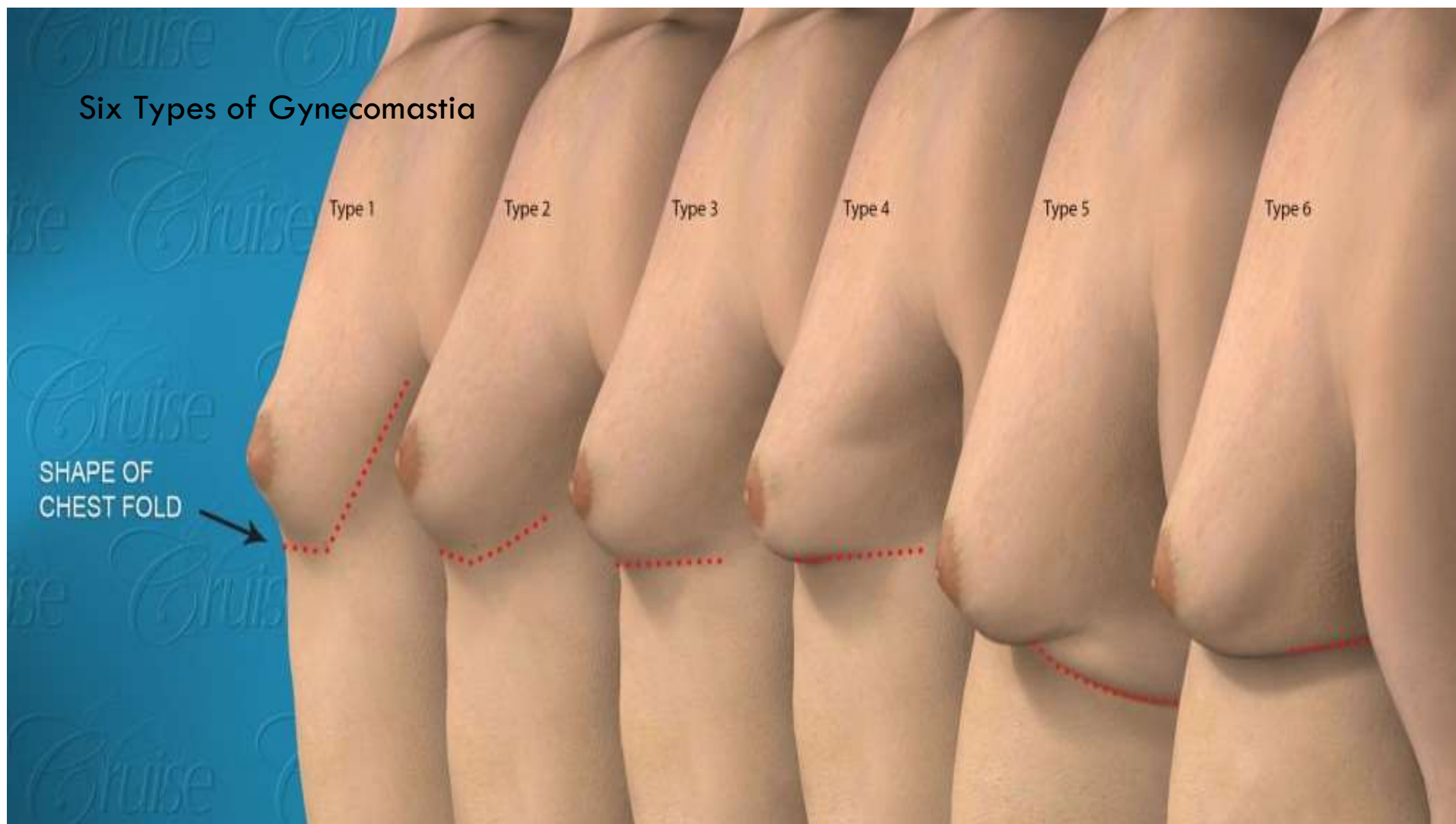
Menopause - irregularity & functional nodularity

Steroid hormone receptors

- Estrogen receptor
- Progesterone receptor
 - may present in tumour tissue
 - activated when occupied by specific hormone ligand
 - activation of estrogen rec leads to the induction of numerous cellular genes, which encode critical enzymes & secrete peptide growth factors.

- Most important protein induced by ER is the receptor for progesterone.
- Progesterone serve as an indicator for the presence of functional ER
- These receptors are of prognostic significance

Six Types of Gynecomastia



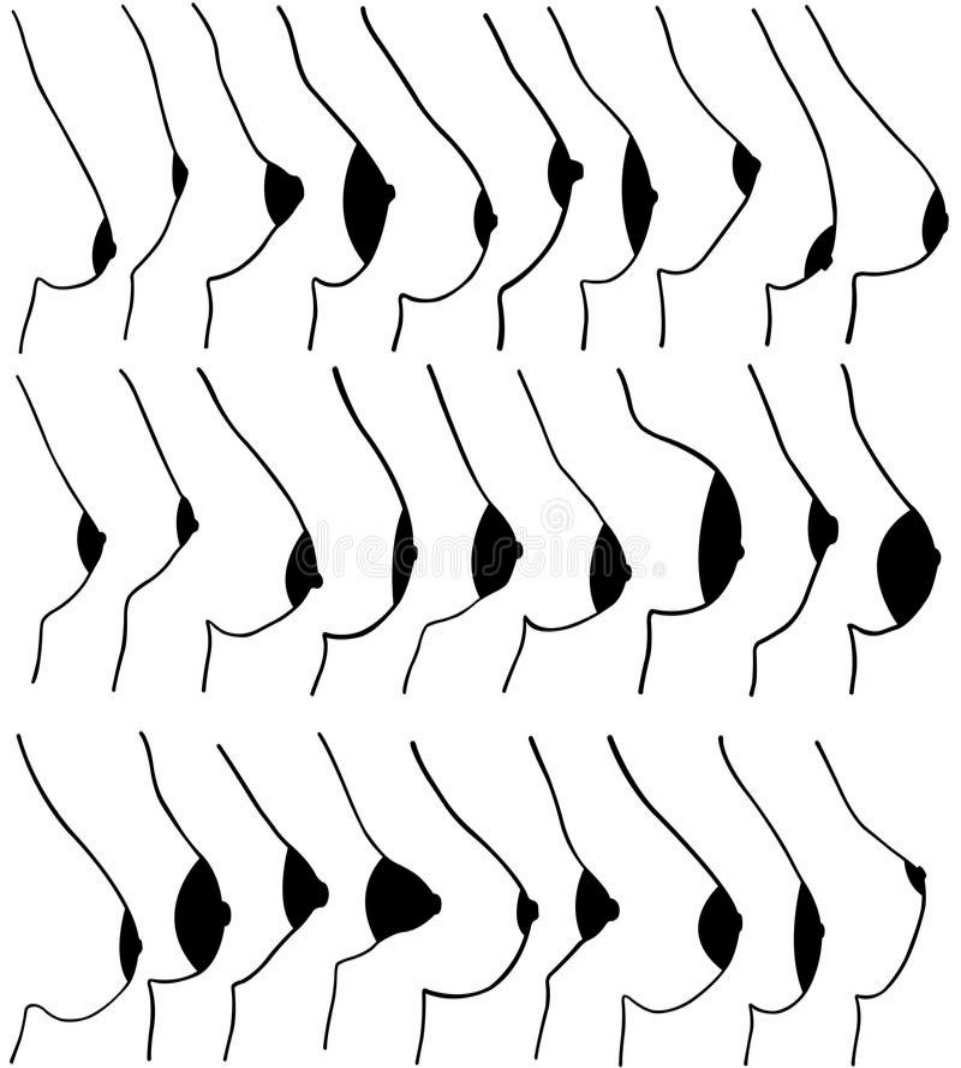
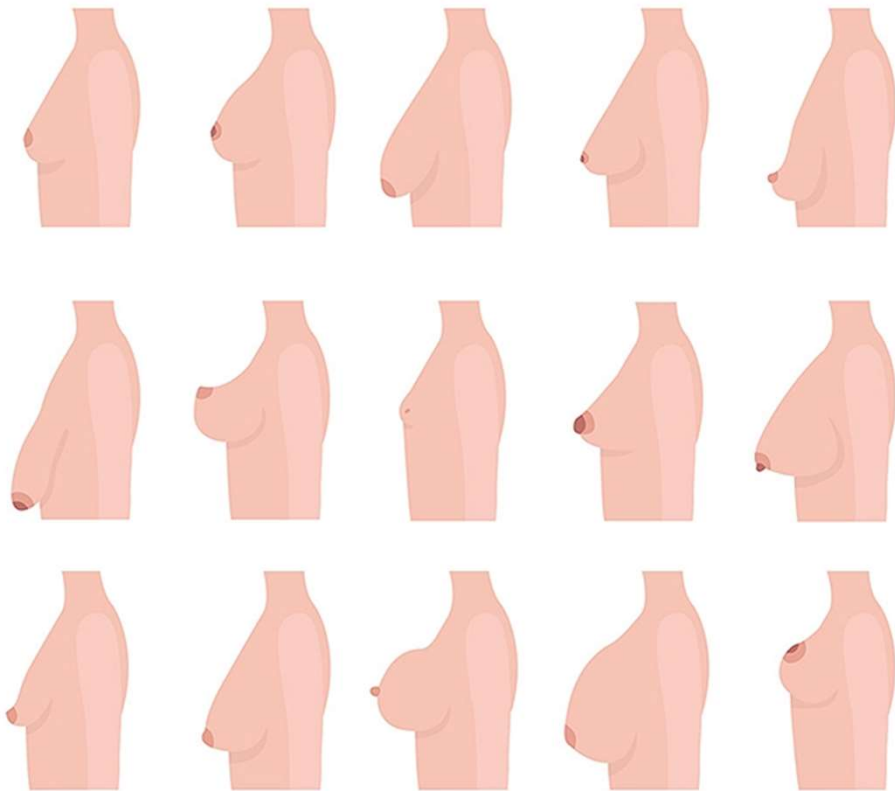


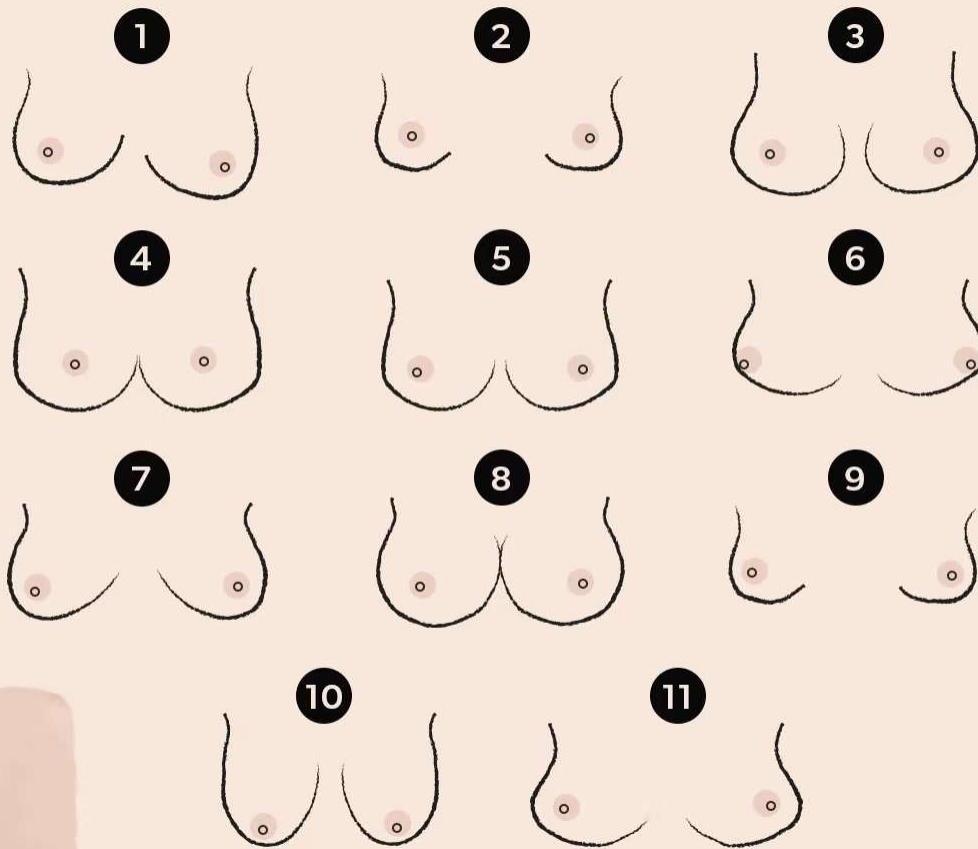
Male gynecomastia



HUMAN BODY SHAPES

BREAST





DIFFERENT

BREAST SHAPES

- | | |
|----------------|-------------|
| 1 Asymmetrical | 7 Relaxed |
| 2 Athletic | 8 Round |
| 3 Bell | 9 Side-Set |
| 4 Close-Set | 10 Slender |
| 5 Fundamental | 11 Teardrop |
| 6 East-West | |

BREAST SELF-EXAMINATION

57

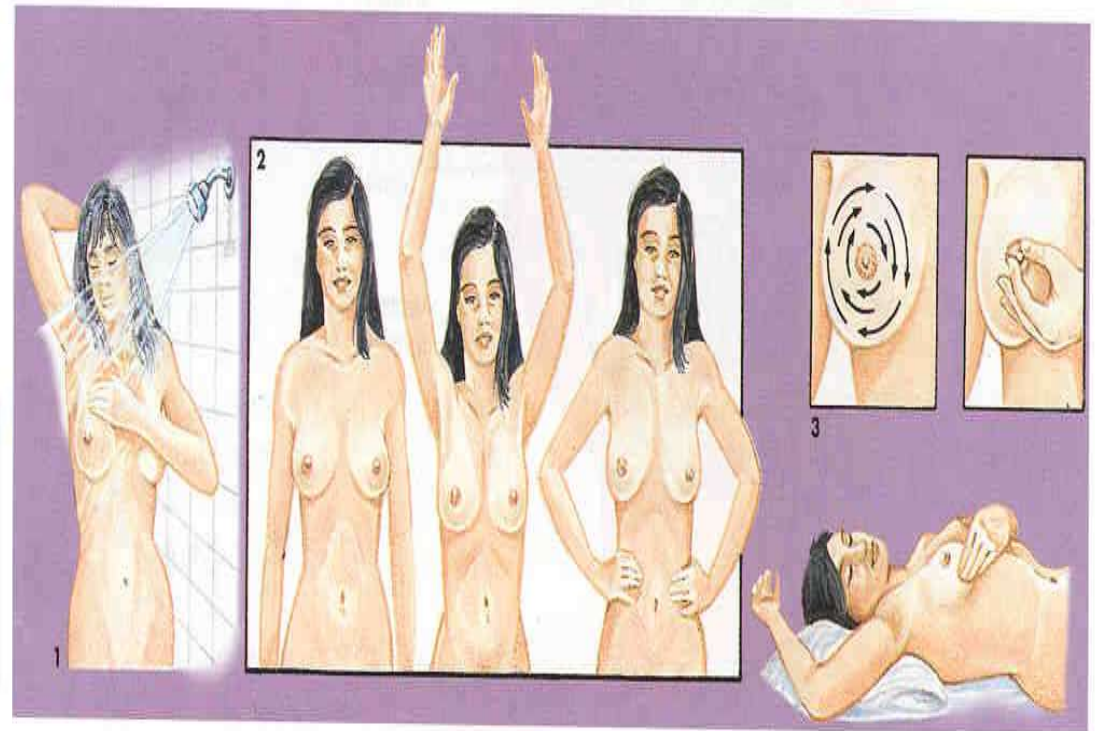
- ❑ Women need to examine their breasts monthly BSE
- ❑ This is a proactive approach to detect possible breast cancer
- ❑ A supplement to clinical exams and mammography
- ❑ Best time for a BSE is a week after menstruation

BREAST SELF EXAM

58

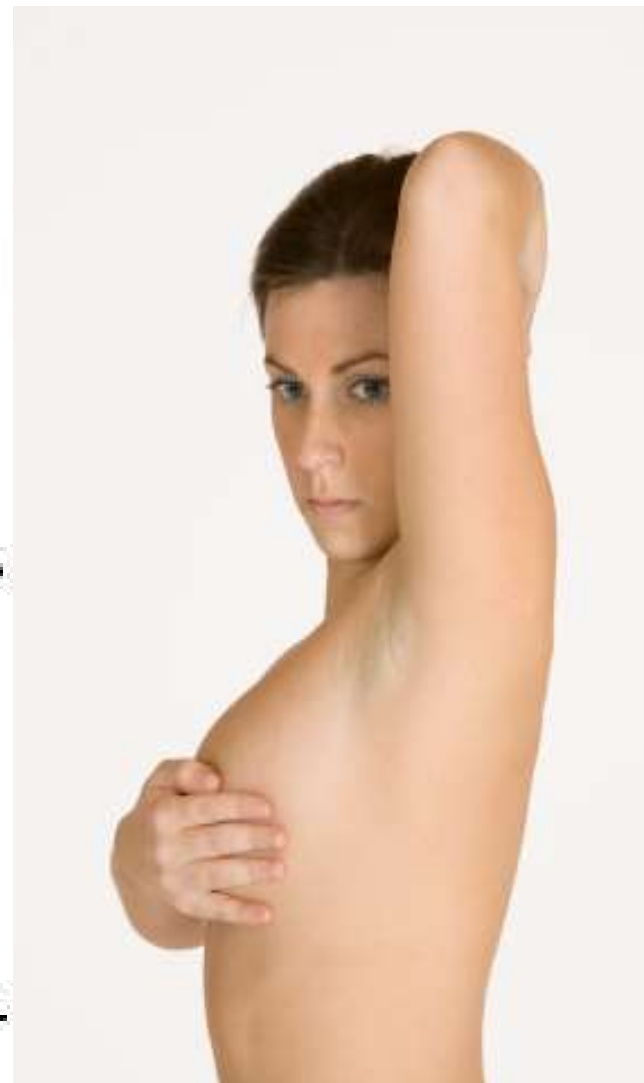
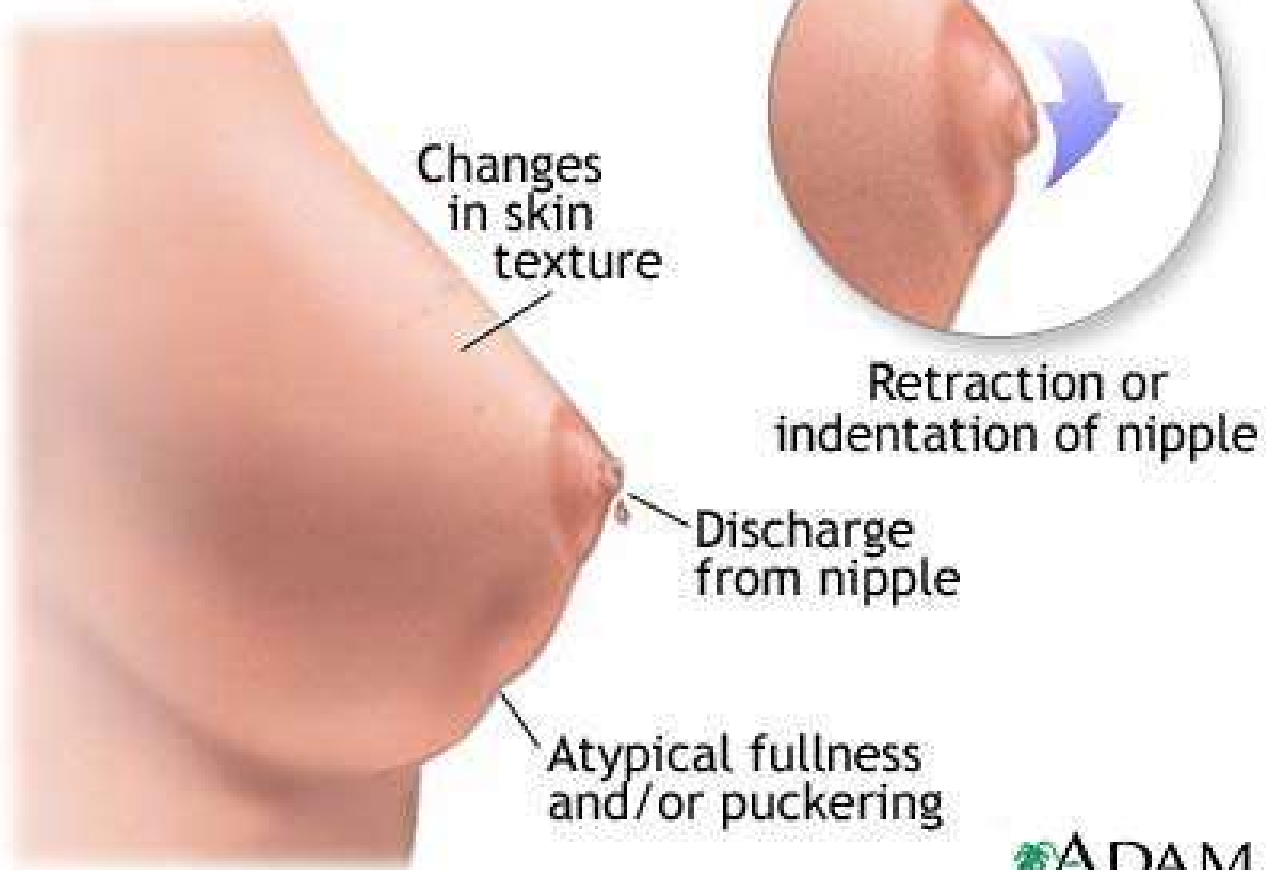


With fingertips close together, gently probe each breast in one of these three patterns



Breast self-exam:
Manual examination
(standing)

Breast self-exam:
Visual inspection



Breast Self-Examination



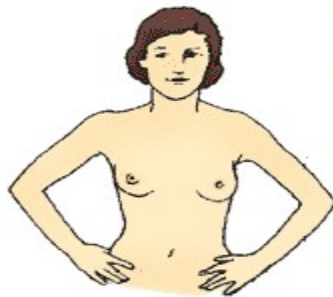
Step 1

Lie down and put your left arm under your head. Use your right hand to examine your left breast. With your 3 middle fingers flat, move in a circular motion over the breast, checking for any lump, hard knot, or thickening. Use different levels of pressure to feel breast tissue at different levels in your breast. Next, put your right arm under your head and examine your right breast with your left hand in the same way. Be sure to check the whole breast, from your collar bone above your breast and down until you feel only ribs below your breast.



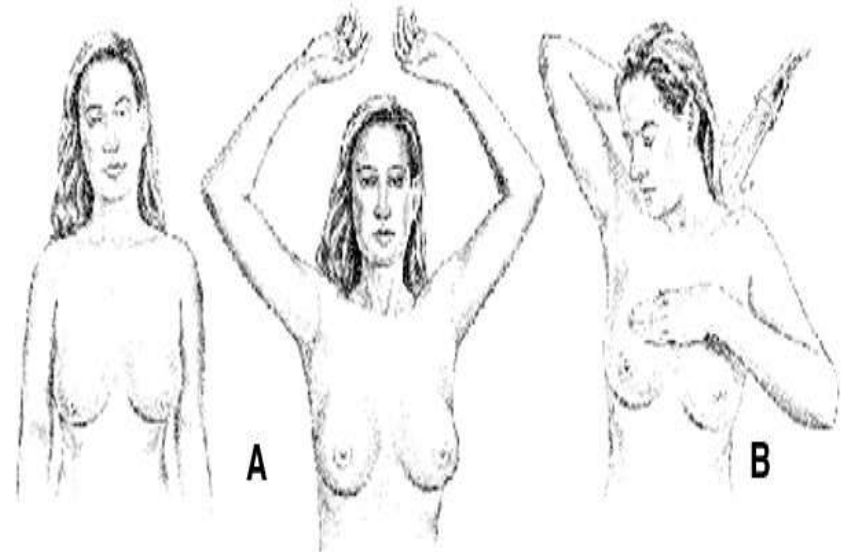
Step 2

Look at your breasts while standing in front of a mirror with your hands on your hips. Look for lumps, new differences in size and shape, and swelling or dimpling of the skin.



Step 3

Raise one arm, then the other, so you can check under your arms for lumps.



Step 4

Squeeze the nipple of each breast gently between your thumb and index finger. Report any discharge or fluid to your health care provider right away.

