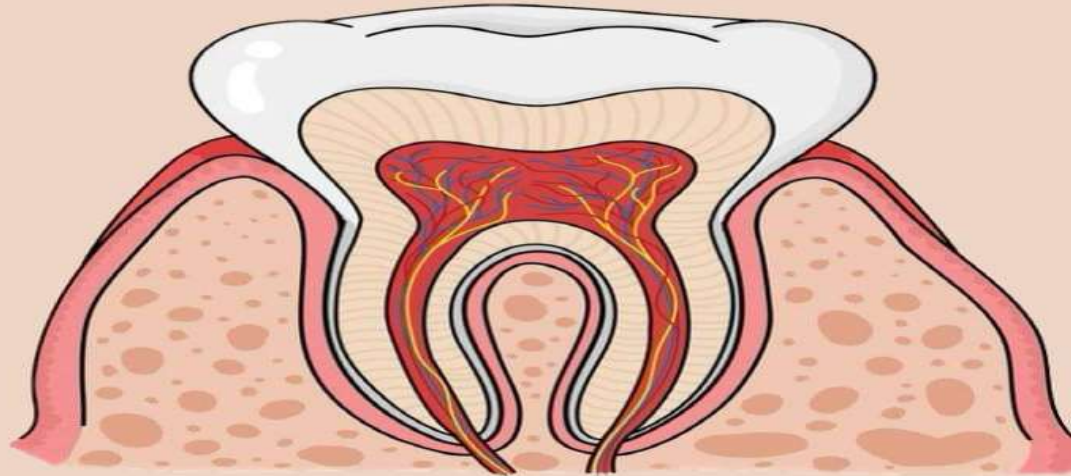




# ANATOMY



LEC NO. : 17  
DONE BY : Nour Al-amoush.



## Anatomy & Embryology

# Male & Female Reproductive systems

الجهاز التناسلي عند الذكر و الأنثى

**Dr. Heba Ali**

[Heba\\_ali@hu.edu.jo](mailto:Heba_ali@hu.edu.jo)

[Heba\\_ali@staff.hu.edu.jo](mailto:Heba_ali@staff.hu.edu.jo)

بخطر ببالكم انه احناك اطباء اسنان شو بفيدينا نعرف هاد كله؟

ببساطة بس عشان بعض المرضى يلي يكون عندهم امراض انتقلت جنسياً مثل الايدز و غيره ممكن هو ما يكون عارف انه عنده هاد المرض، بس يجي و تفحصه بتظهر عليه بعض الاعراض مثل حبوب منتشرة ع كل oral cavity و غيرها، ف بس عشان تكون عارف كي فبدك تتعامل مع هاد المريض و خلي ببالك انه اصلا معظم المرضى بنكروا و ما بعترفوا بوجود هيك امراض عندهم.

# Introduction

The male and female reproductive organs can be grouped by function.

*main* *غدد تناسلية main* *الخصيتين* *المبايض*

➤ **The gonads—testes** in males and **ovaries** in females—<sup>1</sup> produce gametes and secrete sex hormones. → <sup>2</sup>

*In males: sperms*  
*In females: secondary oocyte*

*In females: Progesterone, estrogen*  
*In males: testosterone*

➤ **Various ducts** that store and transport the gametes

*Another function especially in males : place for maturation*

➤ **Accessory sex glands** produce substances that protect the gametes and facilitate their movement.

*بعد ما يتم انتاج الجاميتات هاي يلي بتساعد بحركتها للاعضاء المتخصصة فيها*

➤ **Supporting structures** (**penis** in males and the **vagina** in females) assist the delivery of gametes, and the **uterus** in females assists in the growth of the embryo and fetus during pregnancy.

*المهبل*

*الفرق بين embryo & fetus*  
*لحد الاسبوع الثامن من الحمل، تُعتبر embryo*  
*بعدين بصير fetus*

*الجنين*

# MALE REPRODUCTIVE SYSTEM

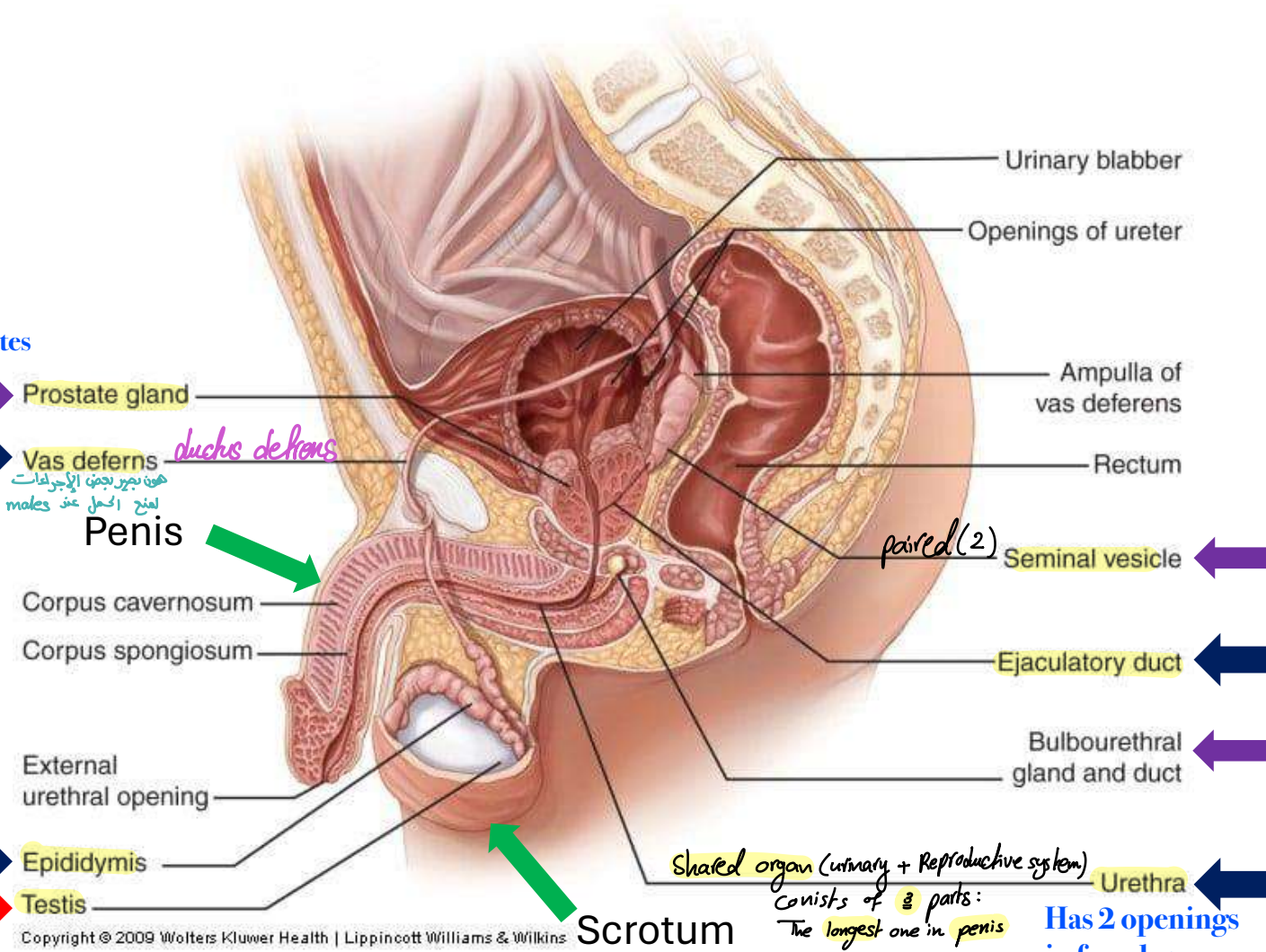
• Includes:

➤ **Testes** (male gonads),

➤ **A system of ducts** (including the **epididymis, ductus deferens, ejaculatory ducts, and urethra**)

➤ **Accessory sex glands** (seminal vesicles, prostate, and bulbourethral glands)

➤ **Supporting structures:** including the **scrotum** and the **penis**





Sagittal plane

SUPERIOR

ANTERIOR

Sacrum

Peritoneum

Seminal vesicle

Urinary bladder

Vesicorectal pouch

Ductus (vas) deferens

Coccyx

Suspensory ligament of penis

Rectum

Pubic symphysis

Ampulla of ductus (vas) deferens *Tube*

Prostate

Ejaculatory duct

Prostatic urethra

Intermediate (membranous) urethra *1cm. urinary + productive*

Deep muscles of perineum

Bulbourethral (Cowper's) gland

Anus

Corpus cavernosum penis

Spongy (penile) urethra

Body of penis

Corpus spongiosum penis

Root of penis

Epididymis

Corona

Glans penis

Prepuce (foreskin)

External urethral orifice

scrotum داخل

Testis

Scrotum

رج کتنی عن structure of penis

(a) Sagittal section

# Testis

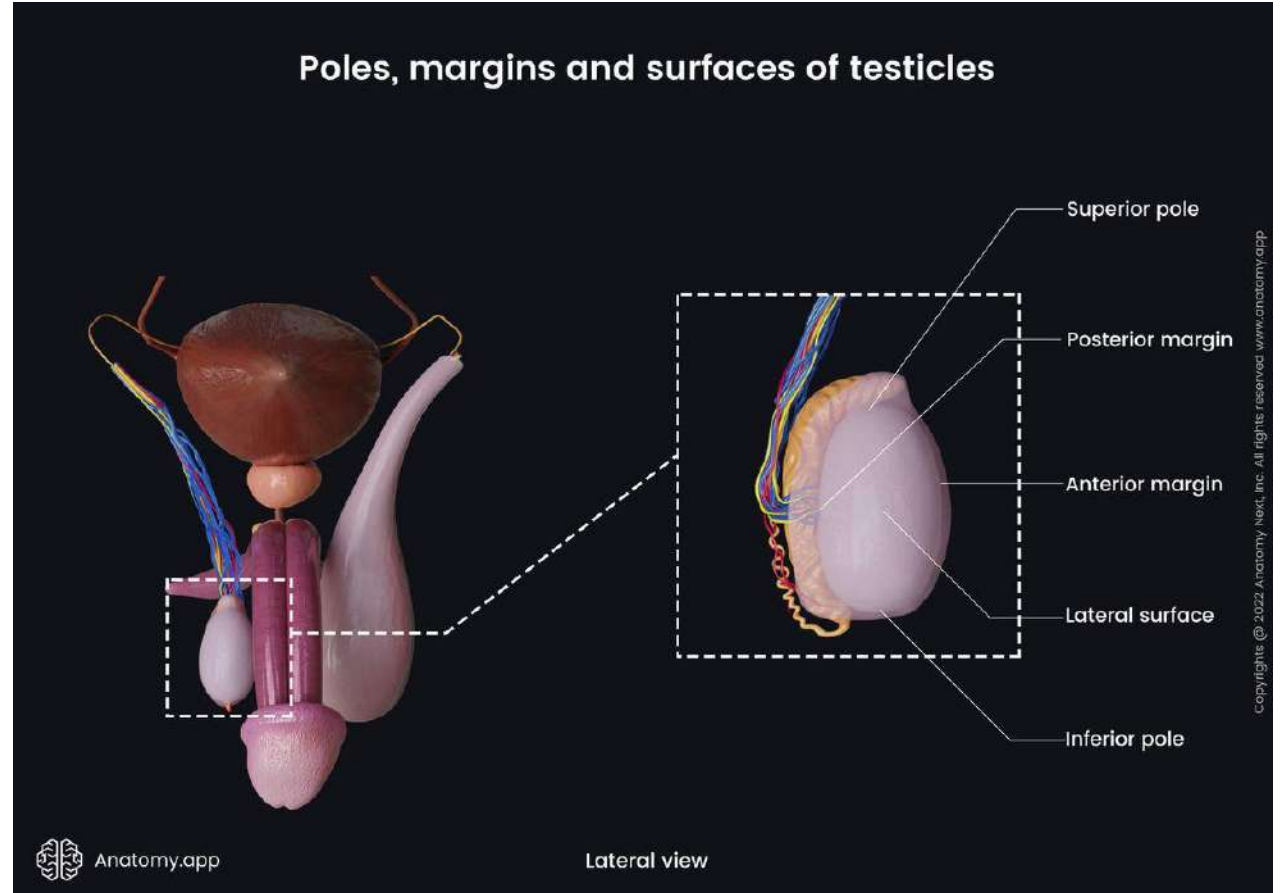
- Right & Left *paired structure.*
- Primary male sex organs.
- Size: 5cm length, 2.5cm thickness and 2.5 cm anteroposterior diameter.

مستطوي  
مطالونه

## Description : It has

- **Two** poles (<sup>superior</sup>upper and <sup>inferior</sup>lower).
- **Two** borders (anterior and posterior).
- **Two** surfaces (medial and lateral).

**Site : In the scrotum** → كيسه الصفن  
وتقریباً هي خارج اكيسم .  
*بوزن لا Anterior Abdominal wall*



# Testis

الاطفال يلي ما ينتزل عندهم الtestis هاي بتكون حالة خطيرة جداً لازم تتعالج قبل السنة ونص او سنتين، لانه انتاج الsperms بتحتاج درجة حرارة معينة لازم تكون اقل من درجة حرارة الجسم عشان هيك الtestis لازم تكون ب sac

رج ناخذه بشكل اوسع آخر 3 محاضرات

- Develop high up on the **posterior abdominal wall** and descend, → *تقريباً بالشعر 7* normally before birth, through the **inguinal canals** to reach the **scrotum**, carrying their blood vessels, lymphatics, nerves & process of peritoneum (**tunica vaginalis**). *1*

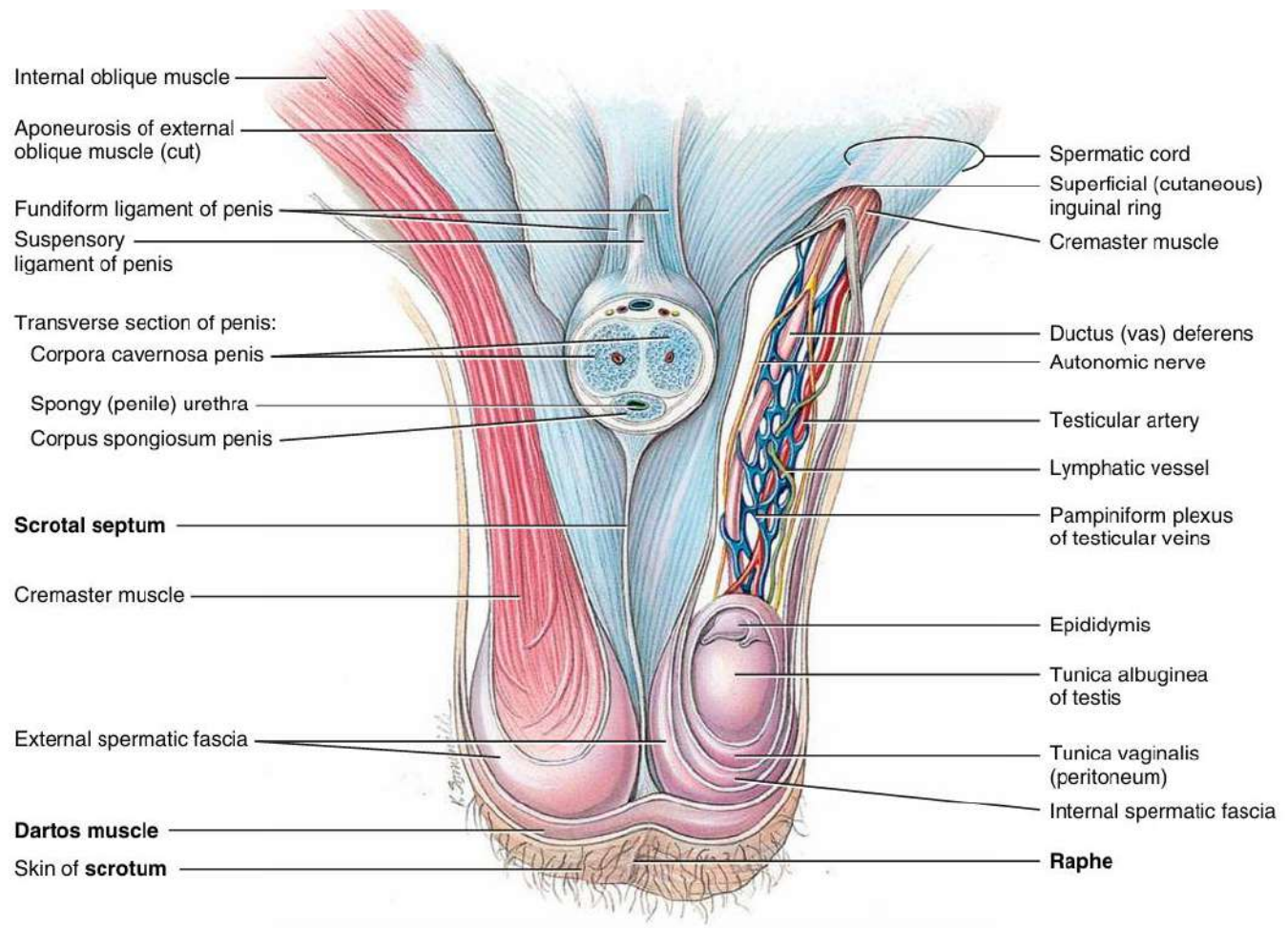
صدمك بتسجلم  
مخا لما  
تنزل.

- **Tunica vaginalis**: *layer of abdomen.* It is a closed sac of peritoneum encloses the testis. It has **a- Inner visceral layer.** *قريب من الاضداد* **b- Outer parietal layer.** *قريب من الجدار*

abdominal cavity

- **Tunica albuginea**: *another deeper layer* thick white fibrous capsule that envelopes testis

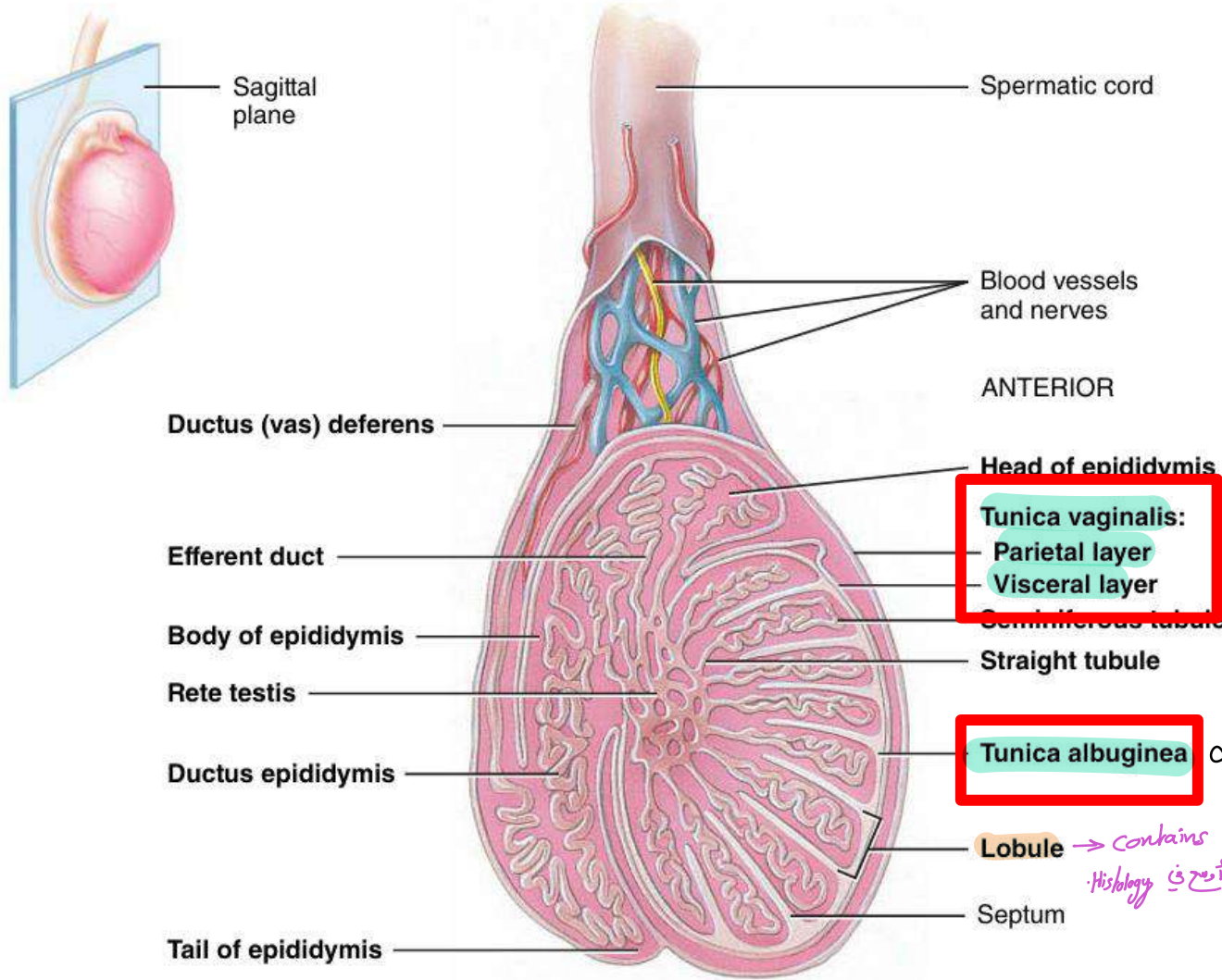
albu → white



Anterior view of scrotum and testes and transverse section of penis

# Internal structure of Testes :

يتم فيها تصنيع sperms و نقلها من seminiferous tubule الى straight tubule بعدين الى شبكة جاية Rete testis و efferent duct ال منها الى ال head of بعدين لل epididymis و هو المسؤول عن نقل الجاميتات هاي.



**Tunica vaginalis:**  
 Parietal layer  
 Visceral layer

**Tunica albuginea**

*deep layer*

*Lobule -> contains 2-3 ducts.  
 كذا ناخذو بقتل أروح في Histology.*

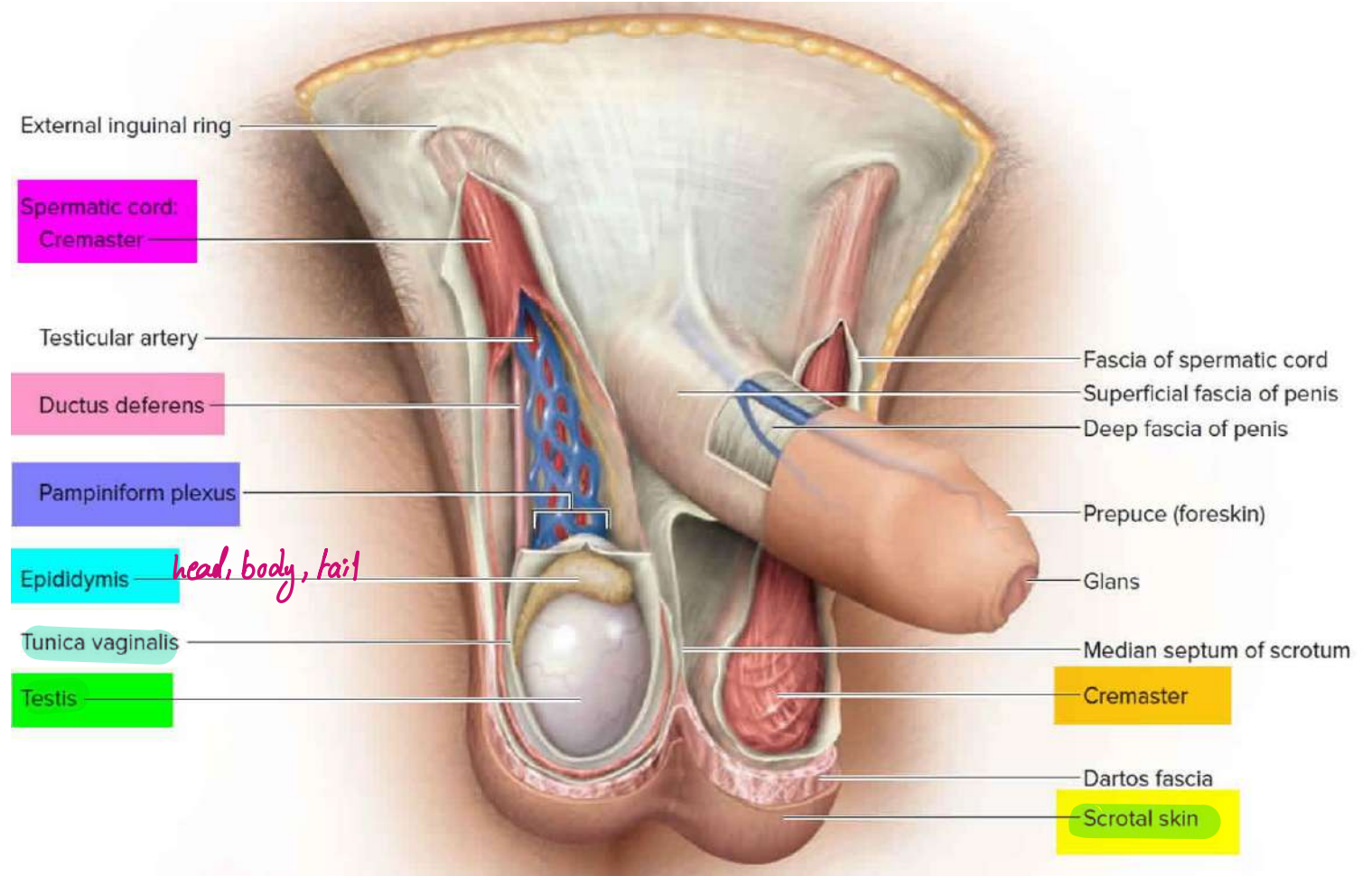
(a) Sagittal section of a testis showing seminiferous tubules



# Scrotum support the testis.

- Is a cutaneous bag containing the **two testes**, **two epididymis** and the **lower parts of the spermatic cords** of both sides.   
*skin → کتین جلدی*  
*Tube*  
*ہاڈ ایجز پی ٹیوں حامل*  
*Testis دتہر خلاہ Structure*

- It can be considered as an **out pouching of the lower part of the anterior abdominal wall**.   
*خارج اکبسم*  
*لانہ بی درجہ حرارہ*  
*افل من درجہ حرارہ اکبسم*  
*زی امتداد جایی*



# Structure of the wall of the scrotum

- The wall of the scrotum consists of the following layers (from superficial to deep)

**1-Skin:** It is thin, wrinkled and pigmented a raised ridge in the midline.

**2-Dartos muscle.** This muscle helps in regulating the temperature of the scrotal cavity. This is a factor which is essential for normal spermatogenesis.

function →

relaxation of this muscle يصير sperms لما يتكون درجة الحرارة مرتفعة عن الحرارة اللازمة لإنتاج sperms contraction يصير skin إذا انخفضت درجة الحرارة بعضي تجعد ب skin

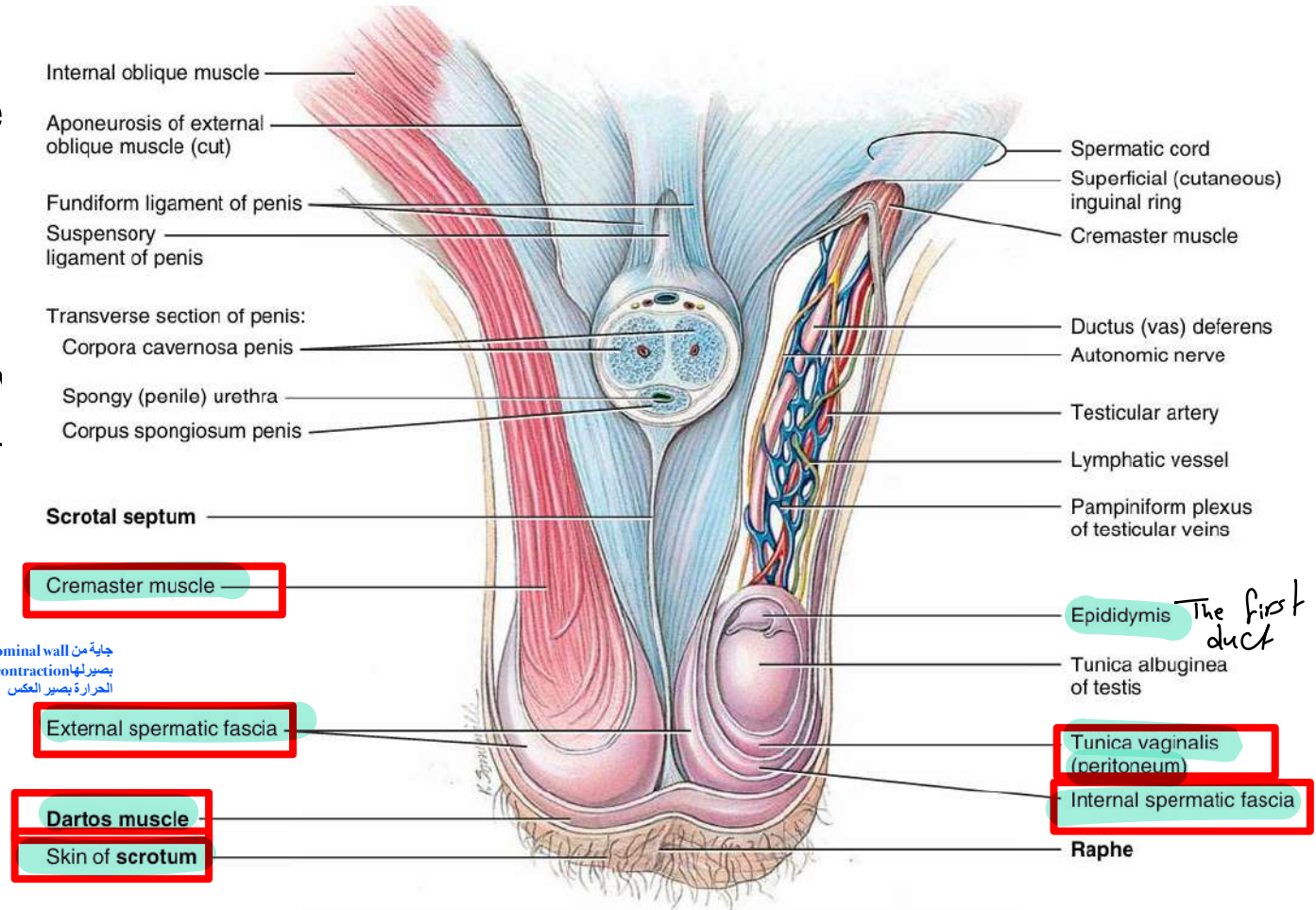
**3-Deep membranous layer (Colle's fascia)**

**4-External spermatic fascia.** جاية من anterior abdominal wall لما تنزل درجة الحرارة بصير لها contraction ف يرتفع الtestis لحتى يلامسوا الskin، ولما ترتفع درجة الحرارة بصير العكس

**5-Cremasteric muscle and fascia:** Responsible for maintaining the temperature for production of spermes

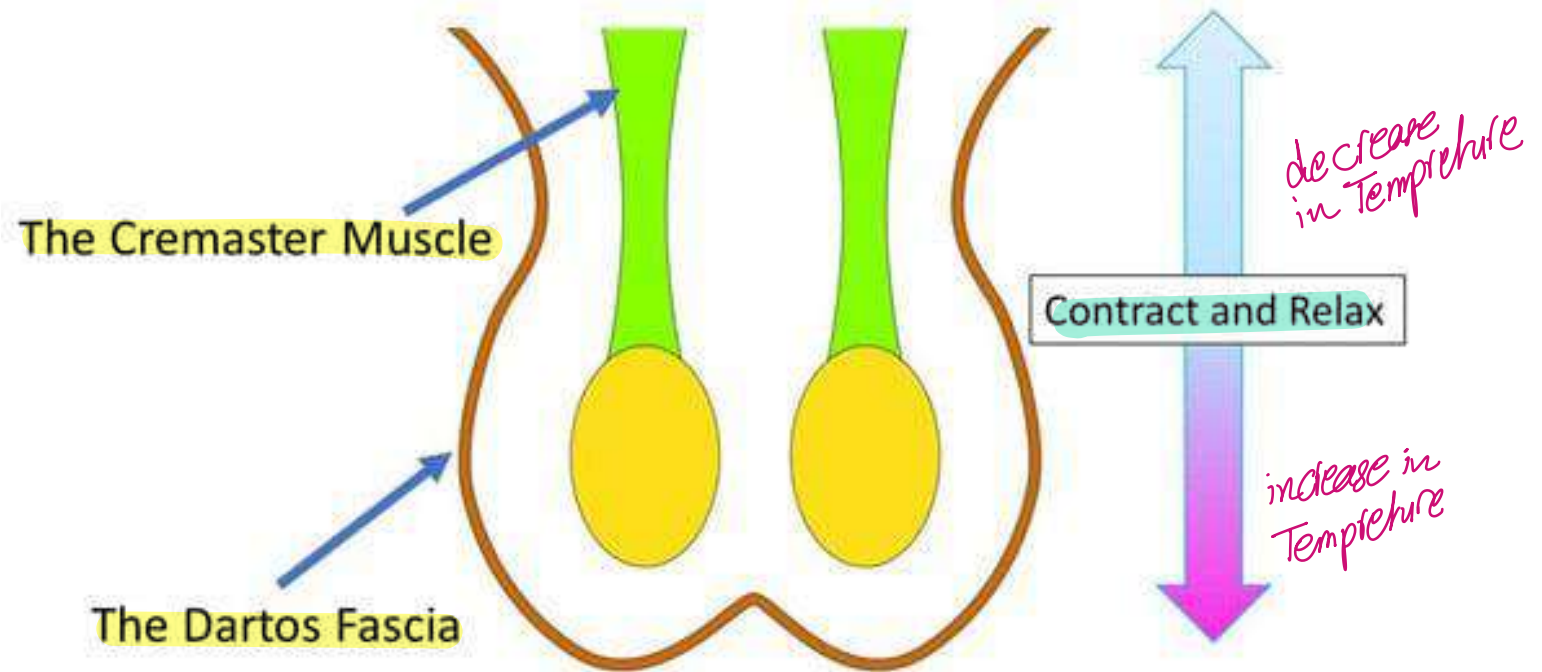
**6-Internal spermatic fascia.**

**7-Parietal layer of tunica vaginalis.**



Anterior view of scrotum and testes and transverse section of penis

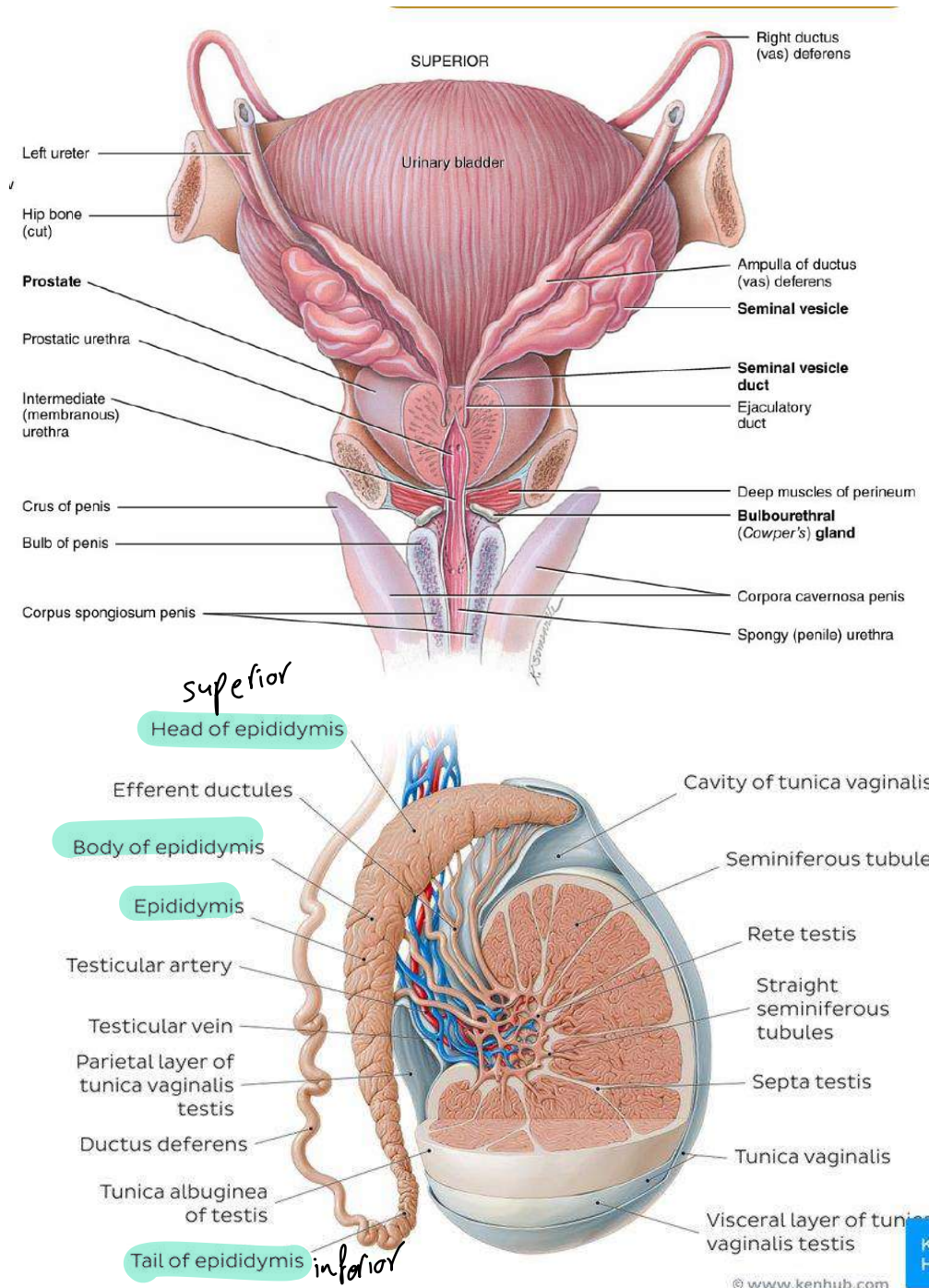
- Normal sperm production requires a temperature about 2–3°C below core body temperature.



# System of ducts *Transportation System.*

- (The first one) on the top of testis.*

**Epididymis:** is a long, coiled duct. It is represented in 3 parts: **Head, Body, & tail** *Comma Shaped Structure*
- Vas (Ductus) Deferens:** is a long narrow muscular duct that conveys the sperms from the tail of the epididymis to the ejaculatory duct. It measures about 45 cm long. *(The longest one + narrow) important*
- Ejaculatory Duct:** each duct is formed behind the neck of the bladder by the **union** of the duct of the seminal vesicle and the terminal part of the ductus deferens. *→ sperms تنقل لآخر duct.*
- Urethra:** the shared terminal duct of the reproductive and urinary systems (prostatic, membranous & spongy) *Intermediate. The longest part of Urethra, موجود في penis.*



# Accessory sex glands in Males

• **Semen** is a mixture of sperm and seminal fluid

→ They are secreted from accessory sex gland to protect sperms.

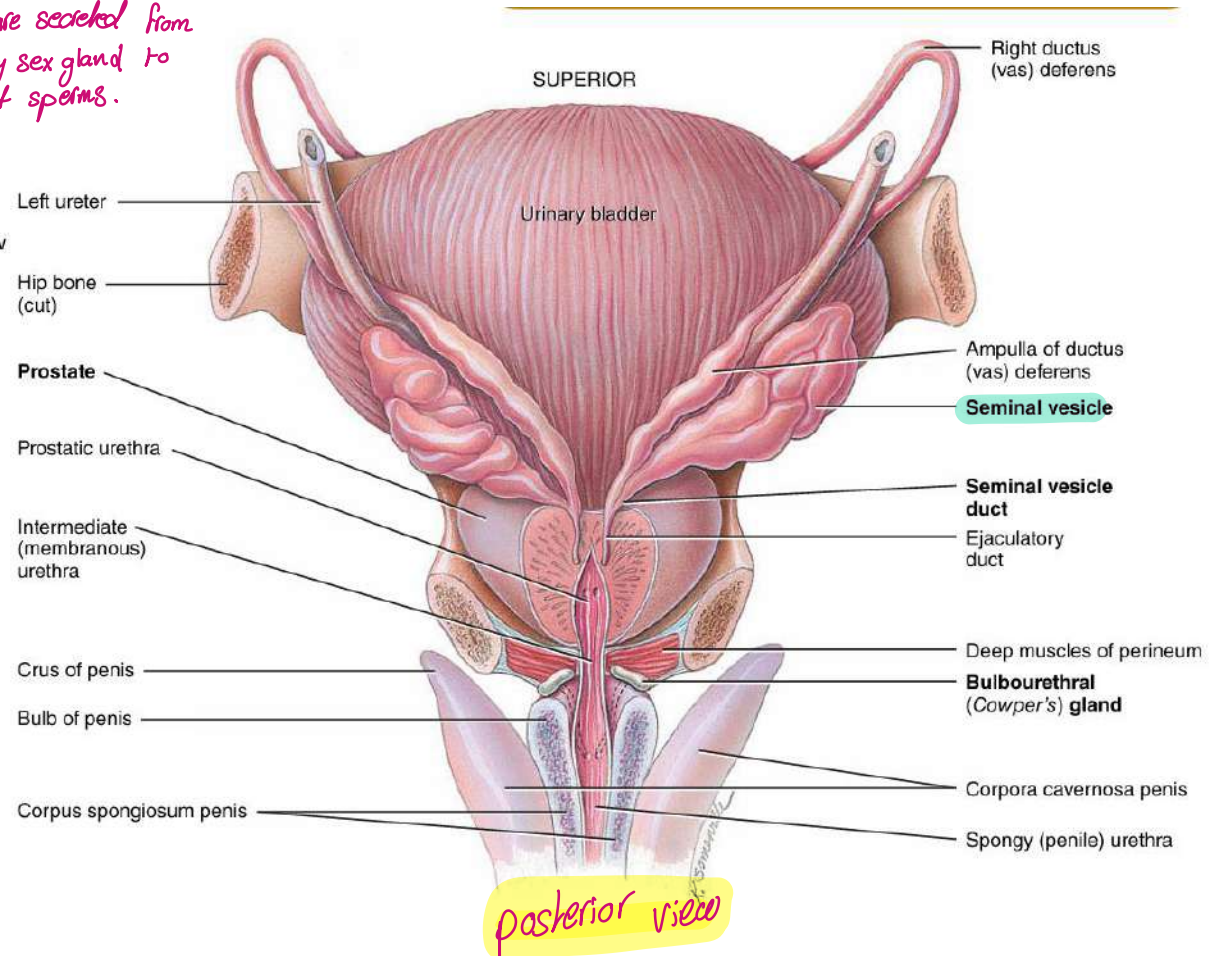
• Accessory sex glands **secrete most of the liquid portion of semen**. Include:

- 1) seminal vesicles, 2) prostate, and
- 3) bulbourethral glands.

1. **Seminal Vesicles**: paired, convoluted and pouchlike structures, about 5 cm in length, lying posterior to and at the base of the urinary bladder anterior to the rectum

**Function:** secrete about 60% of the volume of semen. secrete an alkaline, viscous fluid that contains fructose, prostaglandins, and clotting proteins.

ليس مهم يكون تاعني ؟  
له عشان يعادل الحموضة الموجودة في المهبل عند الأنثى .



# Urinary bladder →

موجودة في pelvic region  
لها كون مقفلة يرتفع

# Accessory sex glands in Males

الاشخاص يلي عندهم تضخم في prostate  
يكون عندهم صعوبة في البول، كما ان شويج تعلم ..

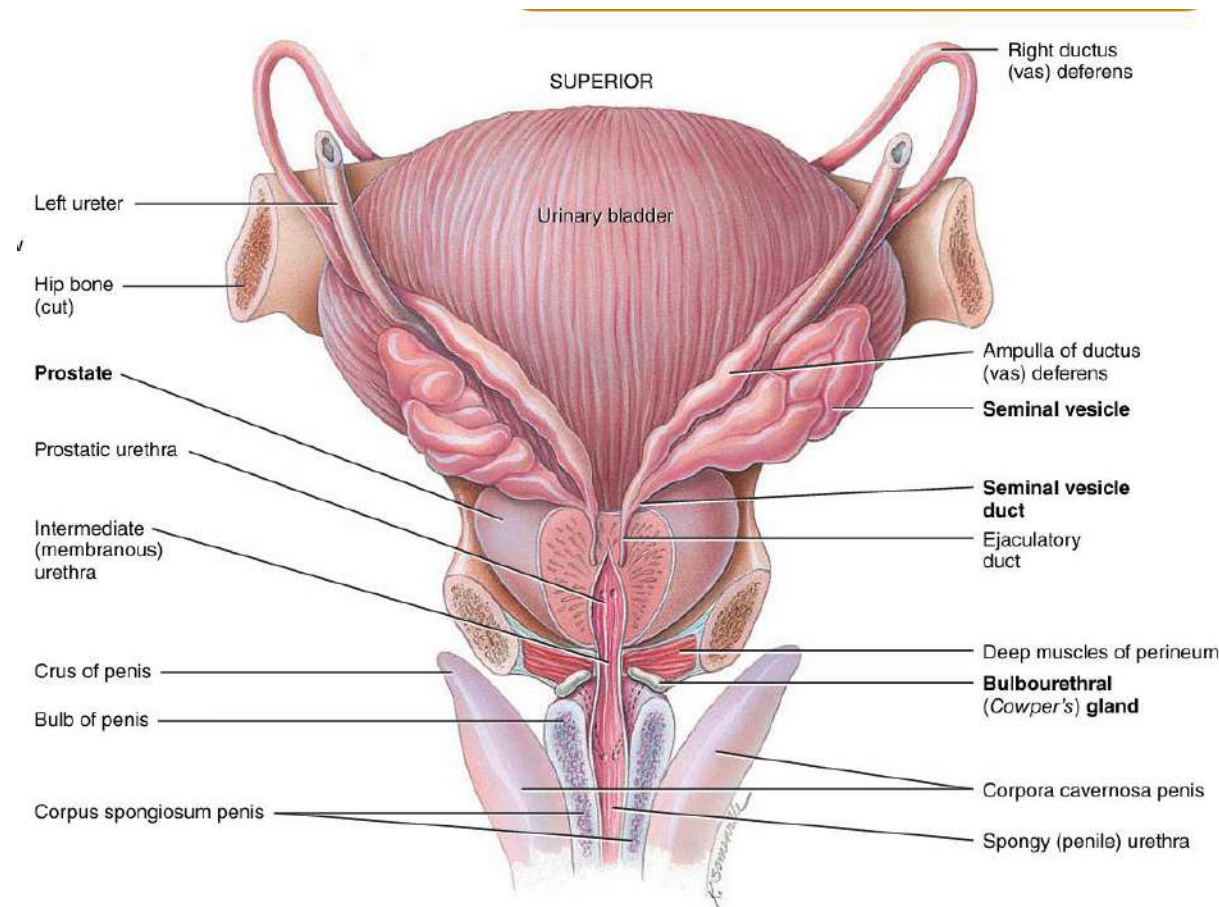
**2. Prostate:** <sup>single ↑</sup> lies immediately inferior to the bladder, posterior to the symphysis pubis and anterior to the rectum. **Shape:** It has a base (upward), an apex (downward). <sup>منطقة</sup>

**Function:** secretes milky, slightly acidic fluid (pH about 6.5) that make up about **25%** of the volume of semen and contribute to sperm motility and viability. <sup>بينما semen alkaline -</sup>

<sup>بقاها محالة ←</sup> seminal vesicles → 60% of semen alkaline .  
prostate → 25% of semen acidic .  
<sup>الجزء</sup>

**3. bulbourethral glands:** <sup>Right + Left</sup> paired glands (Cowper's glands) each about the size of a pea, lie inferior to the prostate on either side of the membranous urethra. <sup>another name ←</sup> <sup>تسمى ← Intermediate</sup>

**Function:** 1) secrete an alkaline substance that protects the passing sperm by neutralizing acids from urine in the urethra. 2) secrete mucus that lubricates the end of the penis → <sup>عشان تاكل مخزبة البول -</sup> <sup>To prevent damage of sperms</sup>



# Penis

- A supporting structure of the male reproductive system that contains the urethra
- **A passageway for the ejaculation of semen and the excretion of urine**
- It is cylindrical in shape and consists of a **root**, **body**, and **glans penis**
- **The root: attached and proximal portion consists of the:**
  - Bulb of the penis
  - Crura of the penis
- **The body** of the penis is the free movable part that is composed of three cylindrical masses of erectile tissue, each surrounded by fibrous tissue called the **tunica albuginea**.
- **Glans penis:** covered with prepuce (foreskin) which is removed during circumcision

أسطوانة

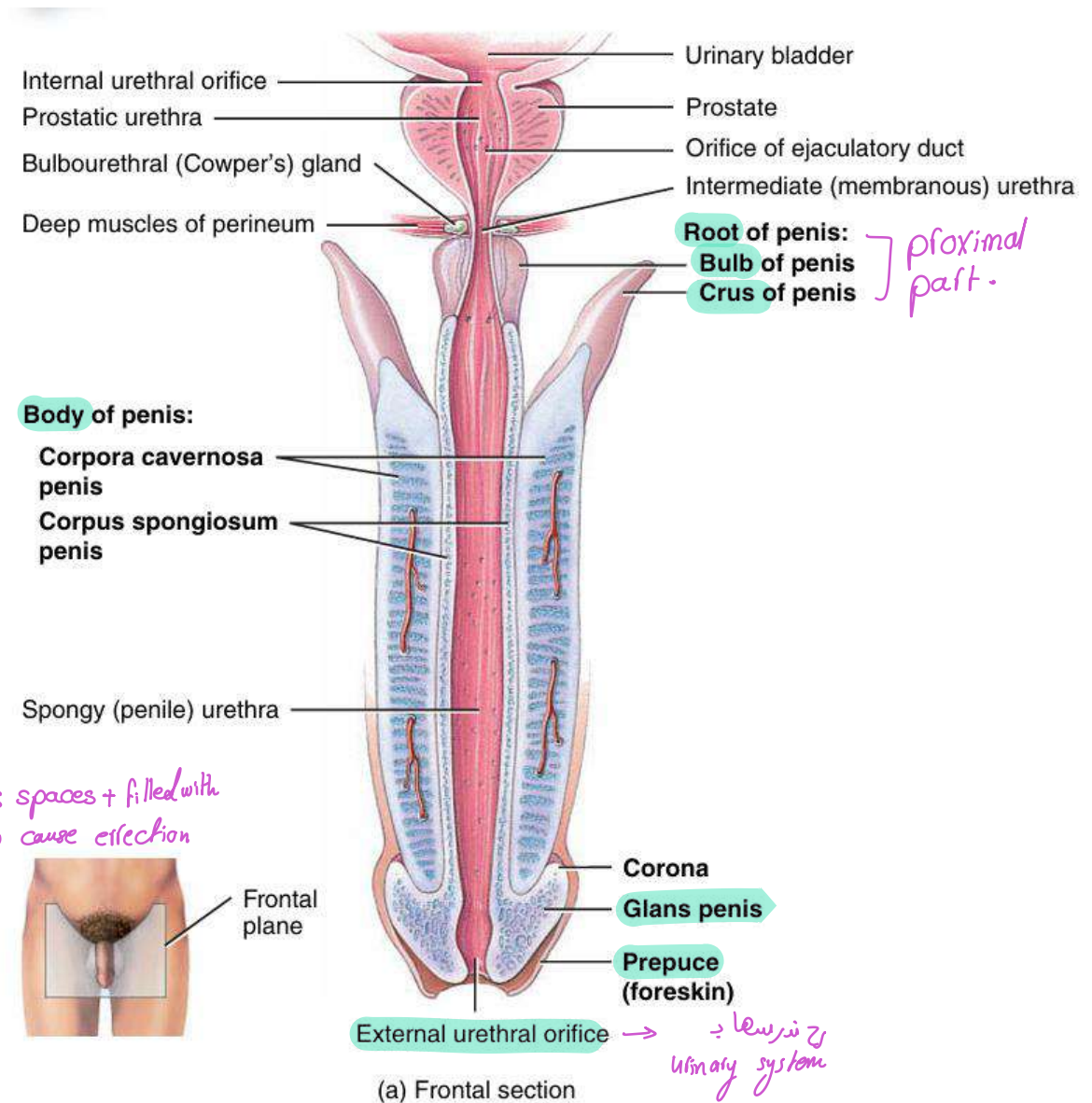
3 parts

① proximal part (close to origin)  
②

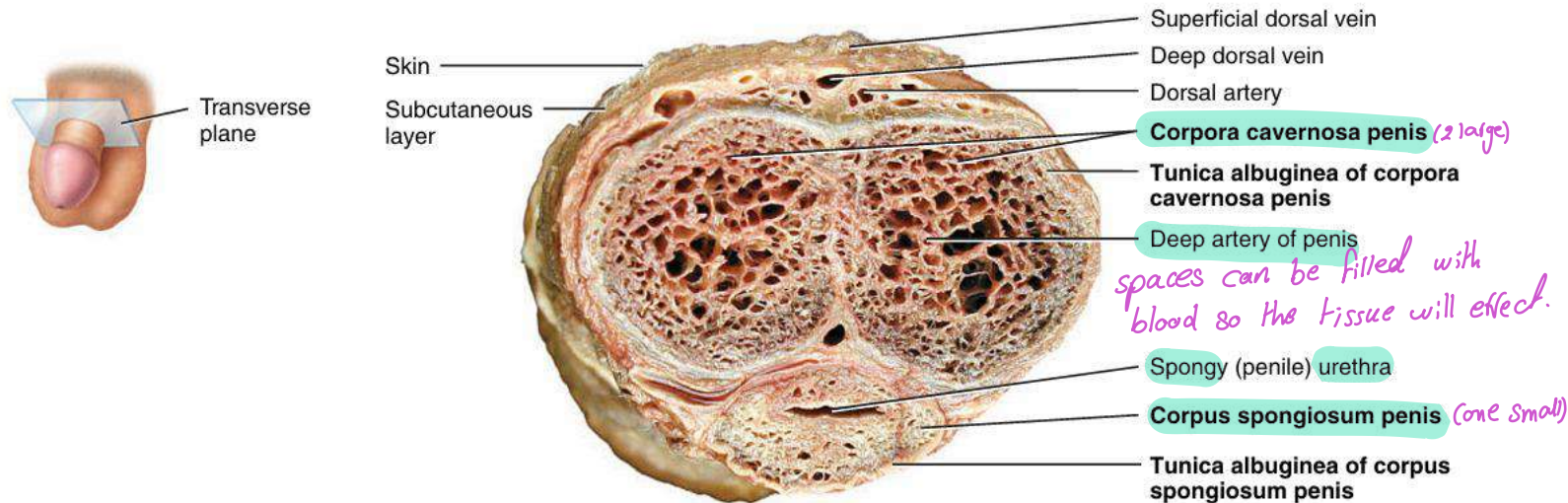
- Bulb of the penis
- Crura of the penis (leg)

→ contains spaces + filled with blood to cause erection

تم إزالته في عملية الكتان

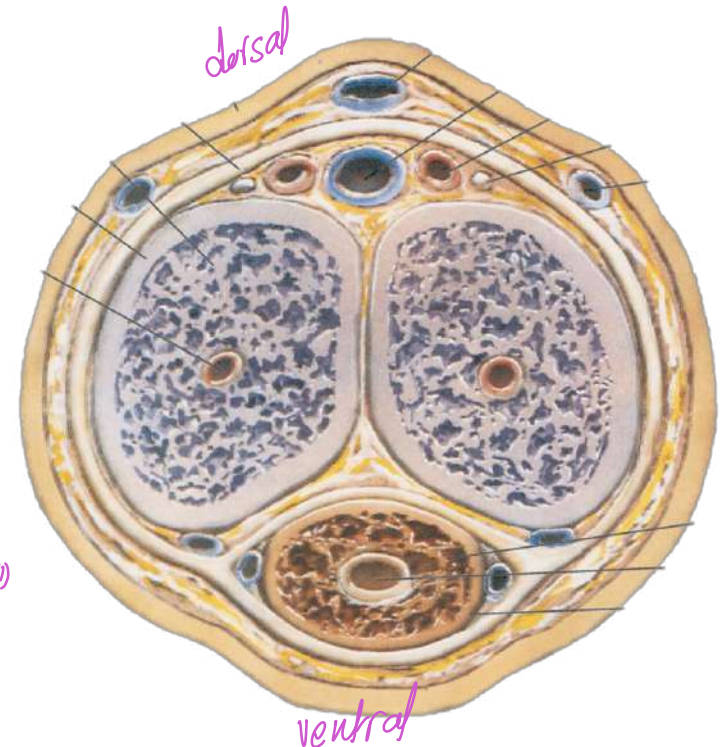


- The **two dorsolateral masses** of the body of the penis are called the **corpora cavernosa penis**. The smaller midventral mass, the **corpus spongiosum penis**, contains the **spongy urethra** and keeps it open during **ejaculation**.



Dissection Shawn Miller, Photograph Mark Nielsen

(c) Transverse section



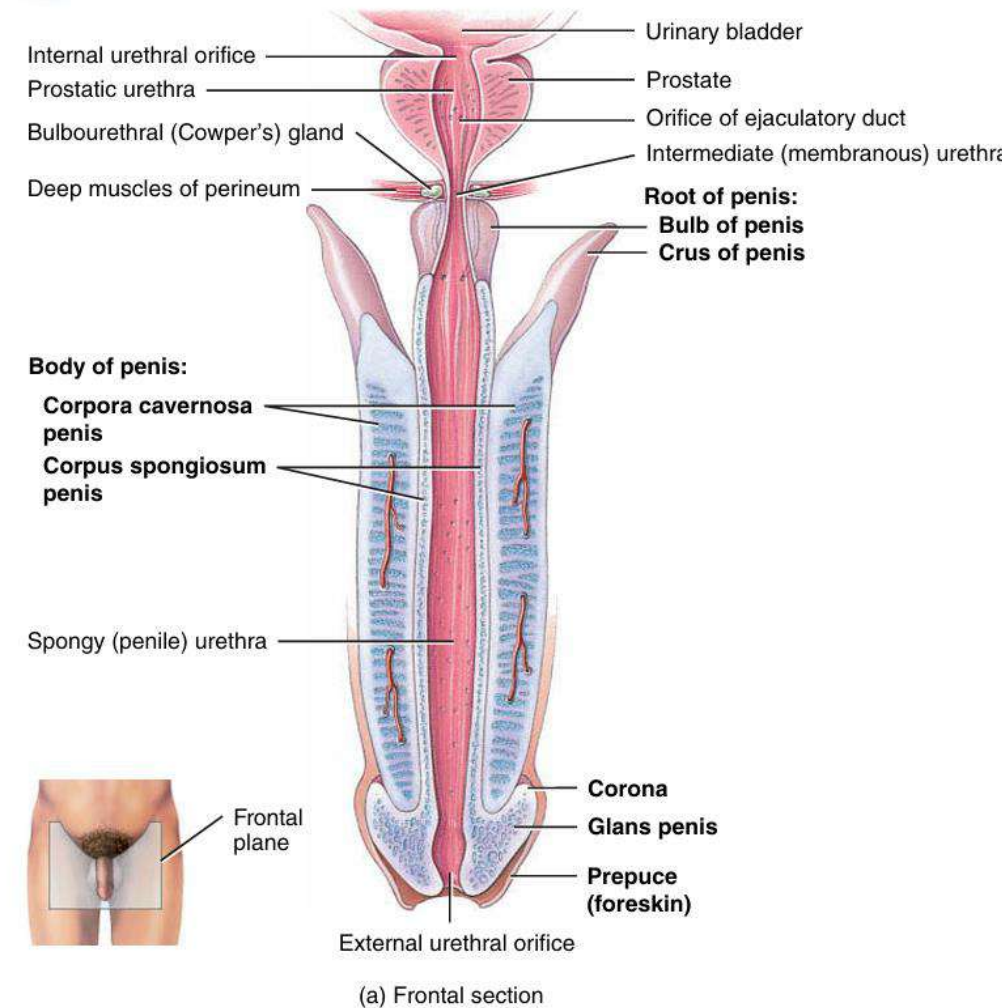
• urethra كوتى

spaces can be filled with blood so the tissue will effect.



# Penis

- The distal end of the corpus spongiosum penis is slightly enlarged to form the glans penis. The distal part of urethra enlarges within the glans penis and forms a terminal opening called **external urethral orifice**.
- Covering the glans in an uncircumcised penis is the loosely fitting prepuce (PRE -poos), or foreskin.

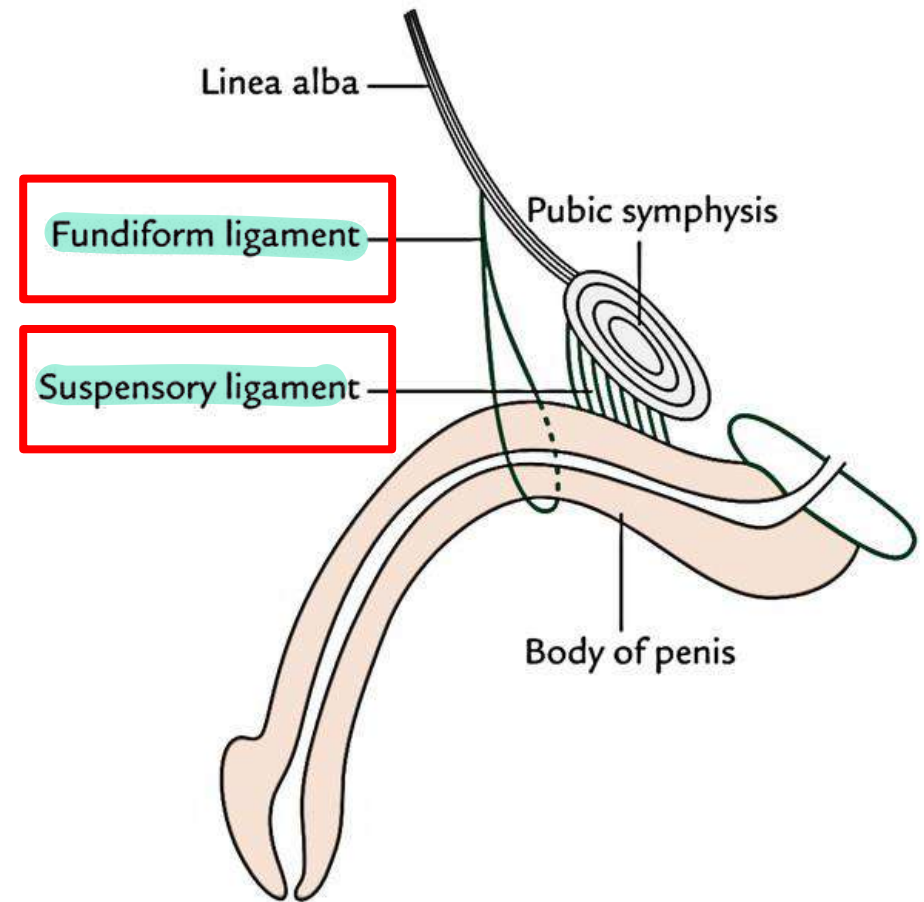


# Supporting ligaments of the penis

- The weight of the penis is supported by two ligaments that are continuous with the fascia of the penis:

(1) **The fundiform ligament** arises from the inferior part of the linea alba

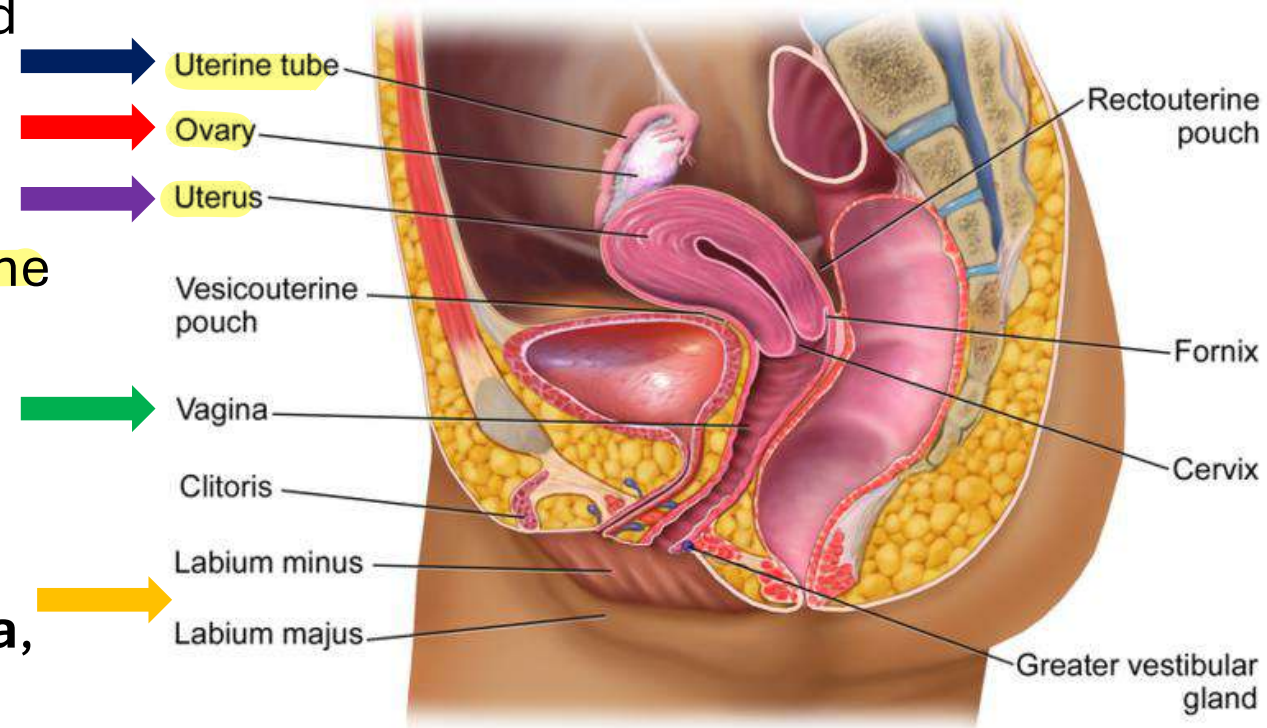
(2) **the suspensory ligament** of the penis arises from the pubic symphysis.



# FEMALE REPRODUCTIVE SYSTEM

- **Consists of:**

1. **Ovaries**: produce secondary oocytes and hormones such as progesterone and estrogens, inhibin, and relaxin
2. **Uterine tubes**, or oviducts: transport secondary oocytes and fertilized ova to the uterus
3. **Uterus**: site of embryonic and fetal development occur
4. **Vagina** (المهبل)
5. **External organs** that constitute the **vulva**, or pudendum.
6. **Mammary glands** also are considered part of the female reproductive system.



(main sex organs) → المبادئ

مهم أثناء الولادة.

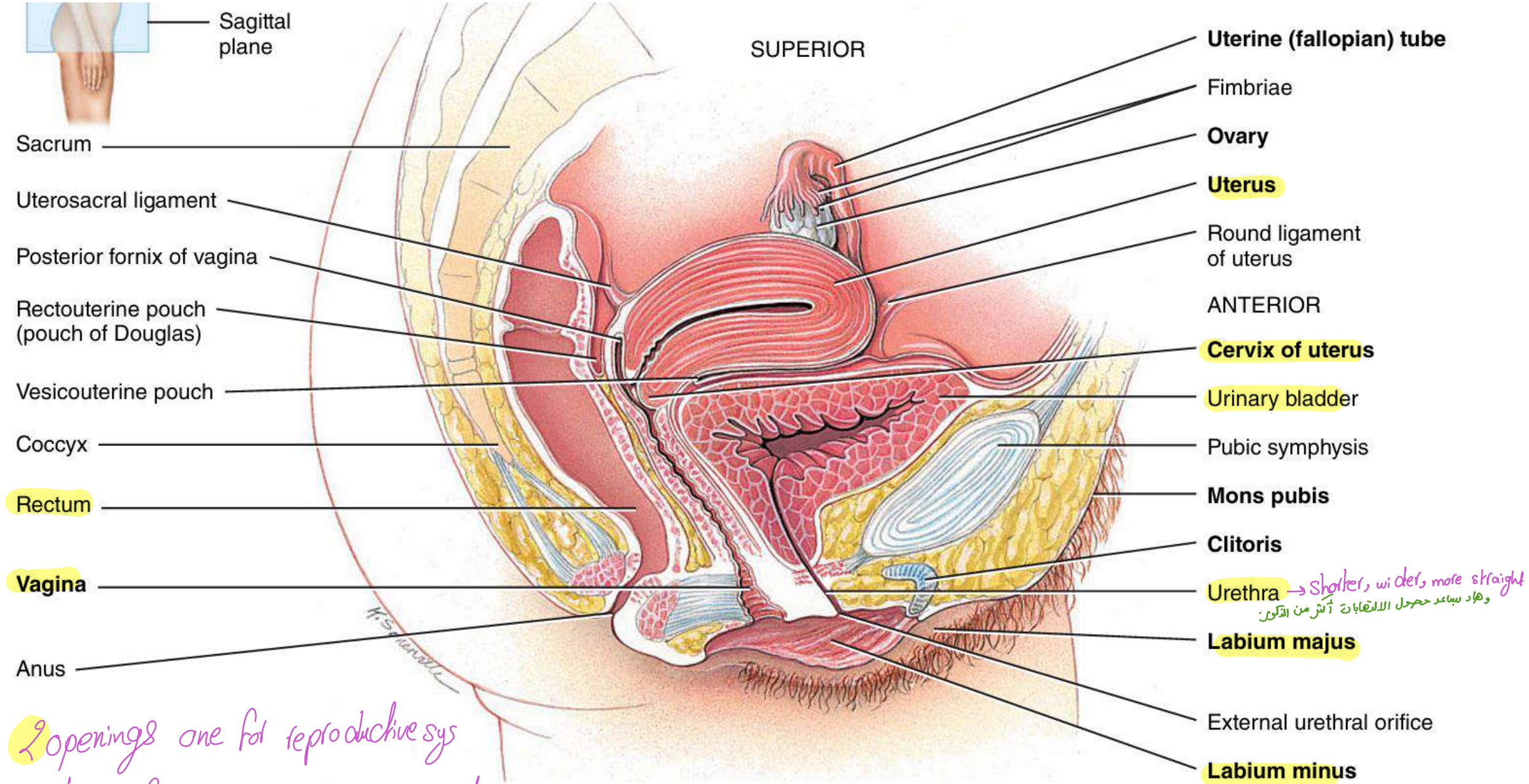
قبل الحمل

↓ الجنين

Breast (secondary sex organ)



Sagittal plane



SUPERIOR

Uterine (fallopian) tube

Fimbriae

Ovary

Uterus

Round ligament of uterus

ANTERIOR

Cervix of uterus

Urinary bladder

Pubic symphysis

Mons pubis

Clitoris

Urethra → shorter, wider, more straight  
وهذا يباعد حرجل الالتقابات أكثر من الذكر.

Labium majus

External urethral orifice

Labium minus

Sacrum

Uterosacral ligament

Posterior fornix of vagina

Rectouterine pouch (pouch of Douglas)

Vesicouterine pouch

Coccyx

Rectum

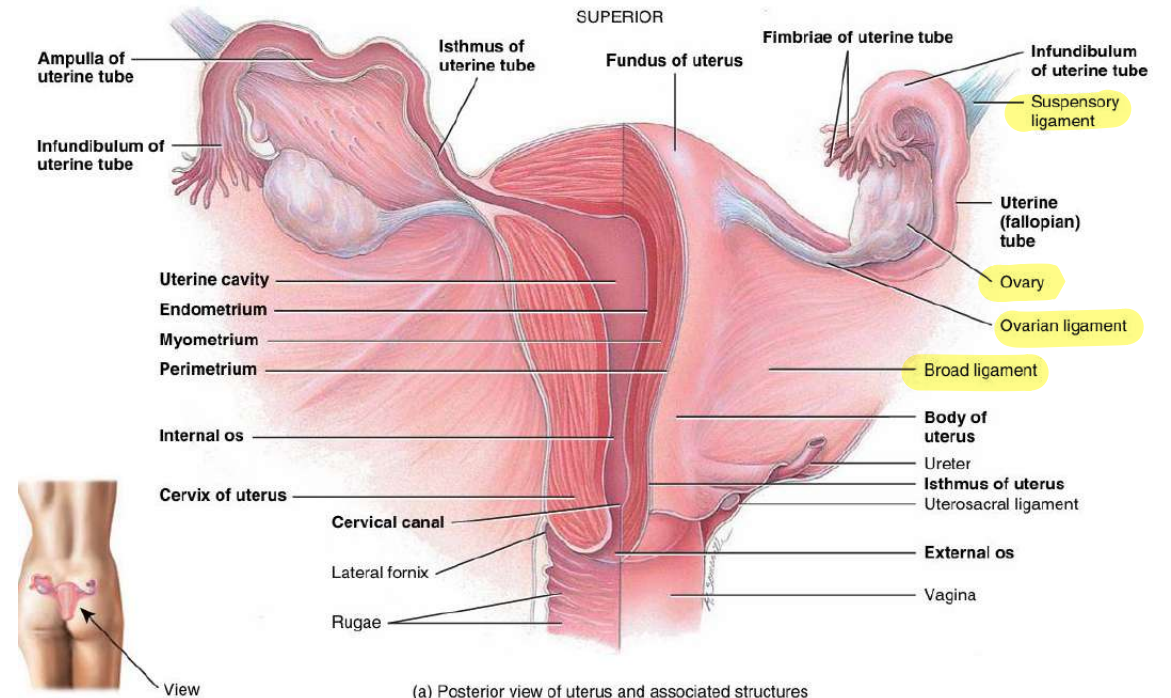
Vagina

Anus

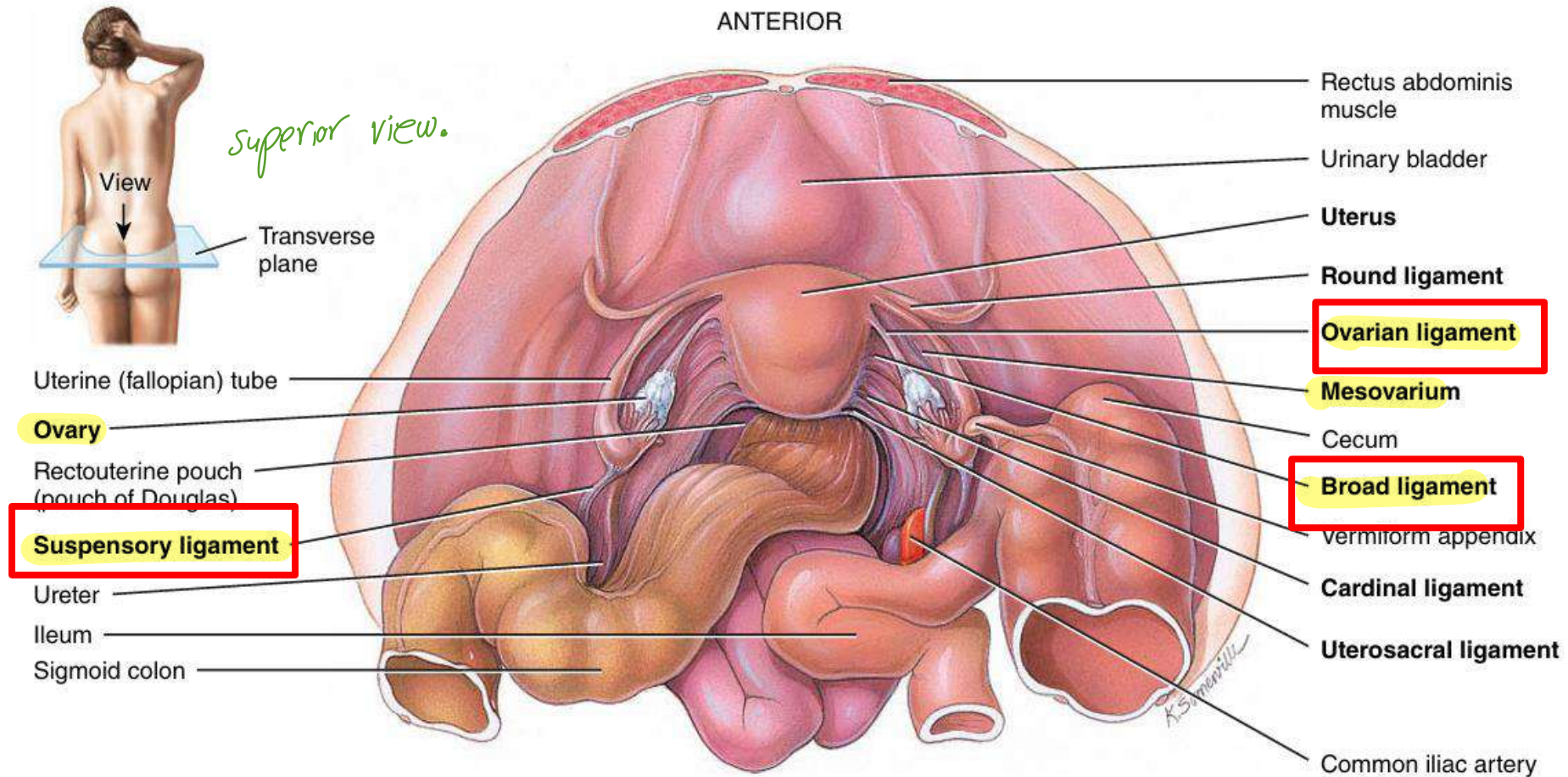
2 openings one for reproductive sys and one for urinary sys unlike male

# Ovaries

- Its dimensions; 3×2×1 cm
- <sup>RT+LT</sup> Paired glands that resemble unshelled almonds in size and shape; **they are the female gonads**
- Homologous to the testes.
- A series of ligaments holds them in position:
  1. **The broad ligament of the uterus:** a fold of the peritoneum, attaches to the ovaries by a subset of this peritoneal fold (**mesovarium**) *بيظن الرحم من أعلى*
  2. **The ovarian ligament** attaches the ovaries to the uterus
  3. **Suspensory ligament** attaches ovaries to the pelvic wall (*laterally*)



# Supporting ligaments of the ovaries



(a) Superior view of transverse section

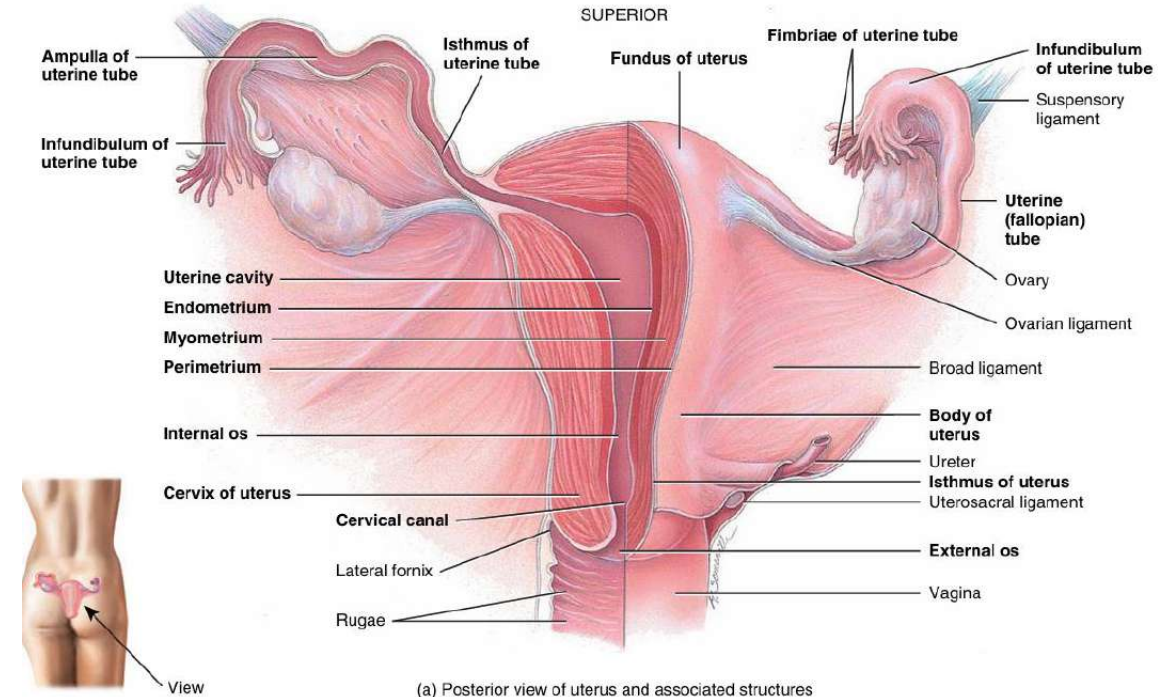
# Uterine Tubes

Other names :-

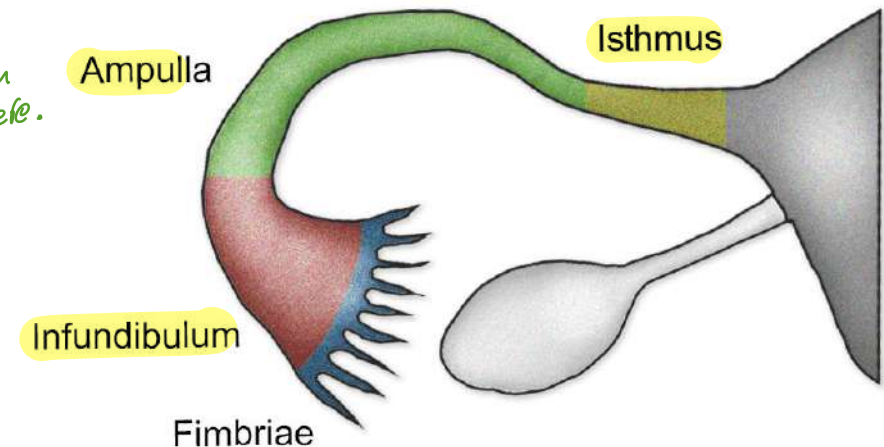
- Fallopian tubes or oviducts
- Extend laterally from the uterus. *الأرقام من حفظ* *أو بقدر تكافي* *medially and inferiorly*
- Measure about 10 cm long and lie within the folds of the broad ligaments of the uterus
- **Function:** transport secondary oocytes and fertilized ova to the uterus. *بتطلع كل شهر* *الإخصاب هنا كان في ampulla في sperm*
- Consists of: *بمشبه القمع*

1. **Infundibulum:** funnel-shaped portion that ends in a fringe of finger-like projections called **fimbriae**
2. **Ampulla:** the widest, longest portion, making up about the lateral two thirds of its length *→ fertilization occurs here.*
3. **Isthmus** is the more medial, short, narrow, thick-walled portion that joins the uterus.

the uterine tube extends **medially and inferiorly** and attaches to the superior lateral angle of the uterus.



(a) Posterior view of uterus and associated structures



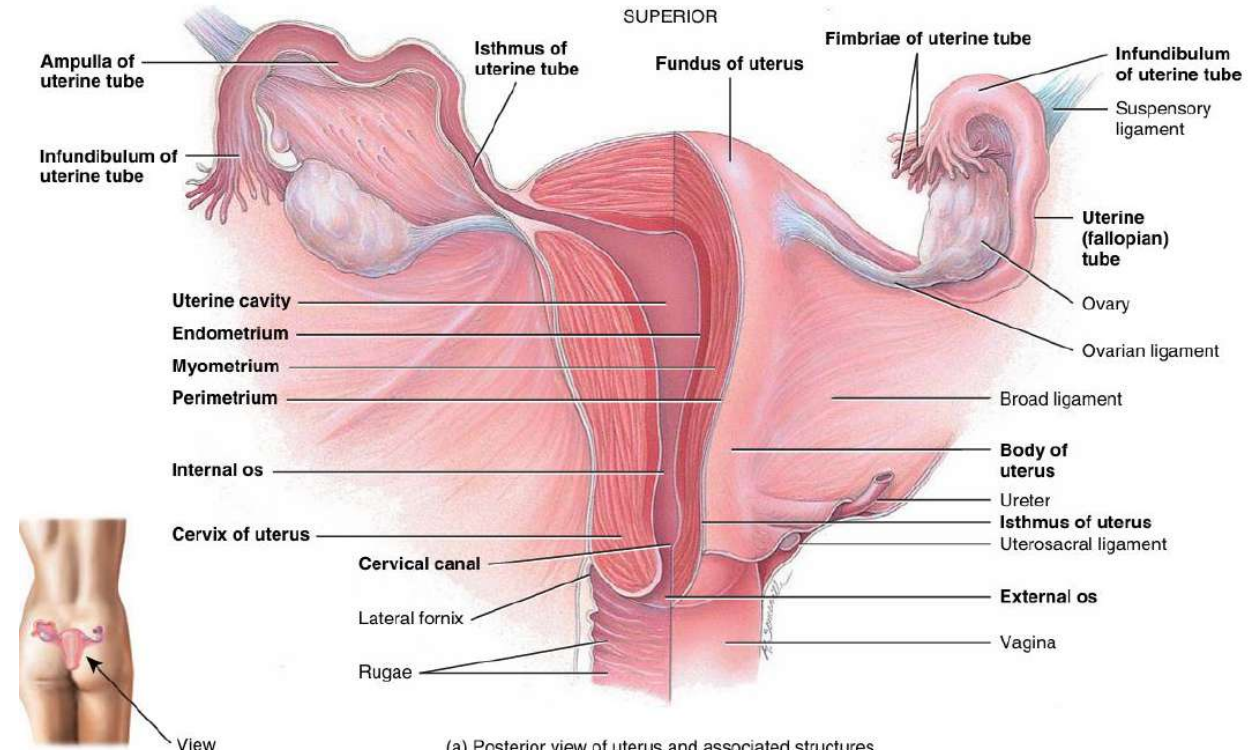
الرحم

# The uterus (womb)

- Resembles the size and shape of an inverted pear.
- Situated between the urinary bladder and the rectum , Anterior to the rectum , posterior + superior to the urinary bladder.
- Functions:
  - Part of the pathway for sperm deposited in the vagina to reach the uterine tubes
  - The site of implantation of a blastocyst, development of the fetus during pregnancy, and labor. *إحدى مراحل تطور البويضة المخصبة*
  - During reproductive cycles when implantation does not occur, the uterus is the source of menstrual flow. *إذا ما حصل حمل رح يصير فقدان للطبقة التي جاني superficial*

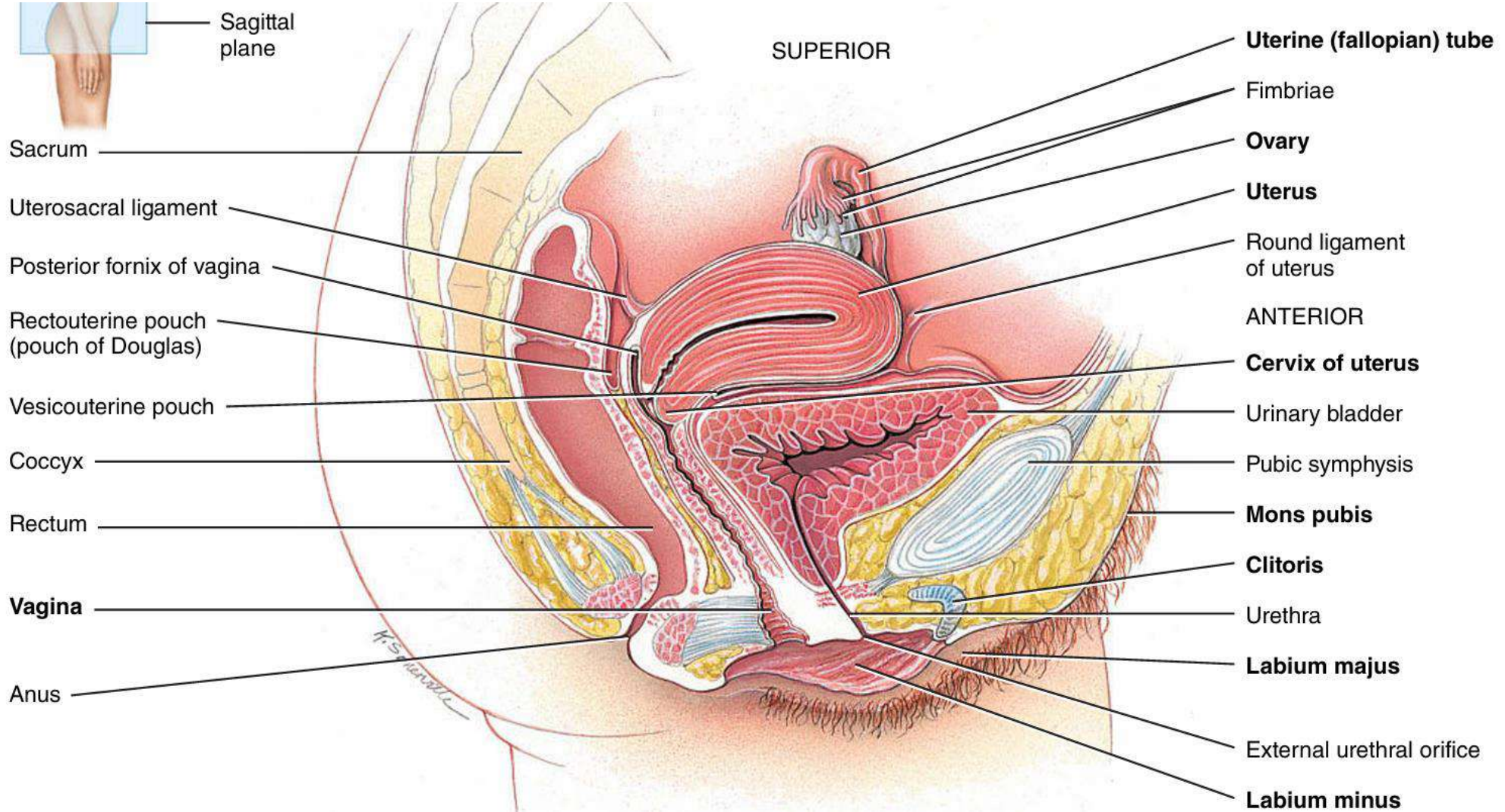
رح يكون أخصر من اليرقان بلقي ولدوا جديد وبوضوح عند النساء يلي انقطع عنهم الكيبيون

In females who have never been pregnant, it is about 7.5 cm (3 in.) long, 5 cm (2 in.) wide, and 2.5 cm (1 in.) thick. The uterus is larger in females who have recently been pregnant, and smaller (atrophied) when sex hormone levels are low



(a) Posterior view of uterus and associated structures





# The uterus (womb)

- **Anatomical subdivisions of the uterus:**

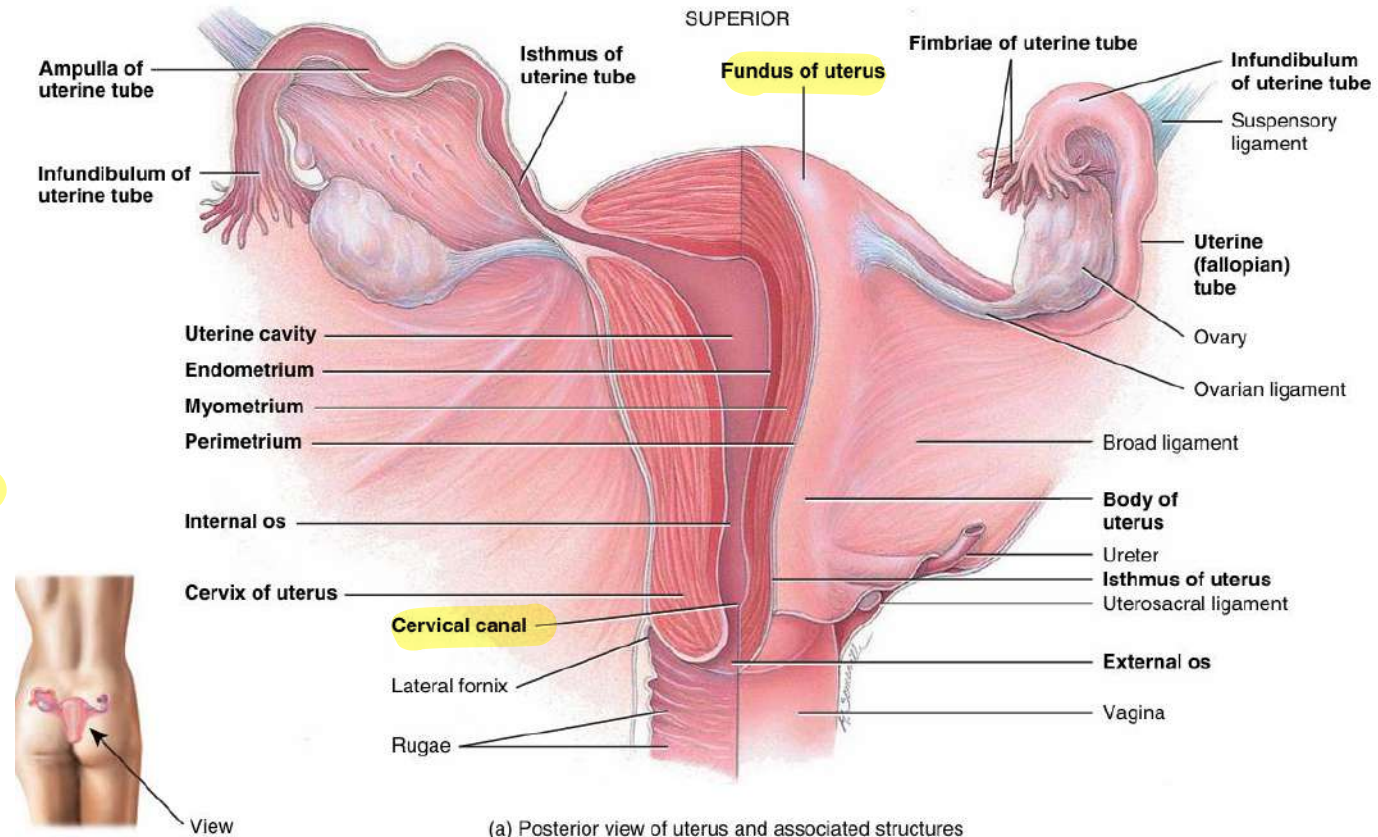
(1) **fundus:** a dome-shaped portion superior to the uterine tubes  
 مثل القبة

(2) **body:** a tapering central portion  
 عنق الرحم

(3) **cervix:** an inferior narrow portion that opens into the vagina.

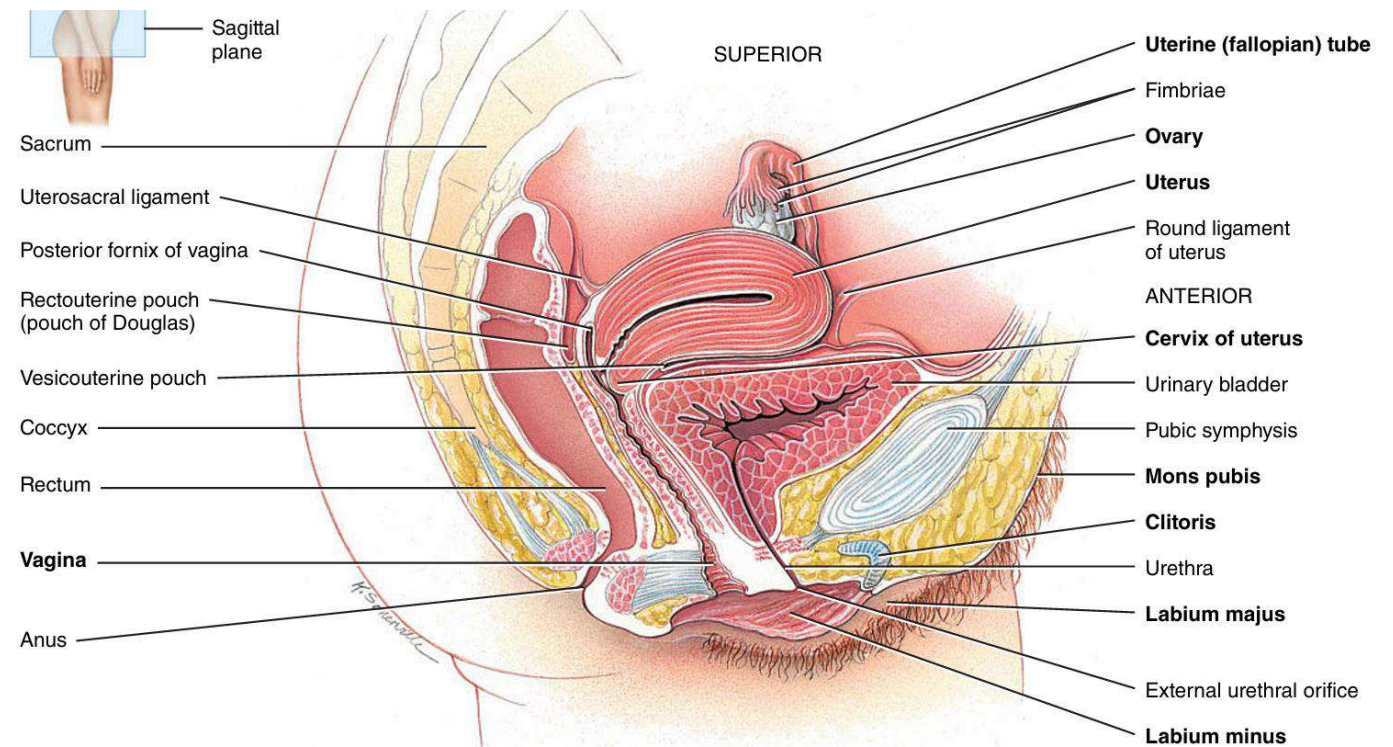
- Between the body of the uterus and the cervix is the **isthmus**, a constricted region about 1 cm (0.5 in.) long.  
 يصبح له توسع كبير خلال الولادة

- The interior of the body of the uterus is called the **uterine cavity**, and the interior of the narrow cervix is called the **cervical canal**. The cervical canal opens into the uterine cavity at the **internal os** and into the vagina at the **external os**.  
 mouth مثل



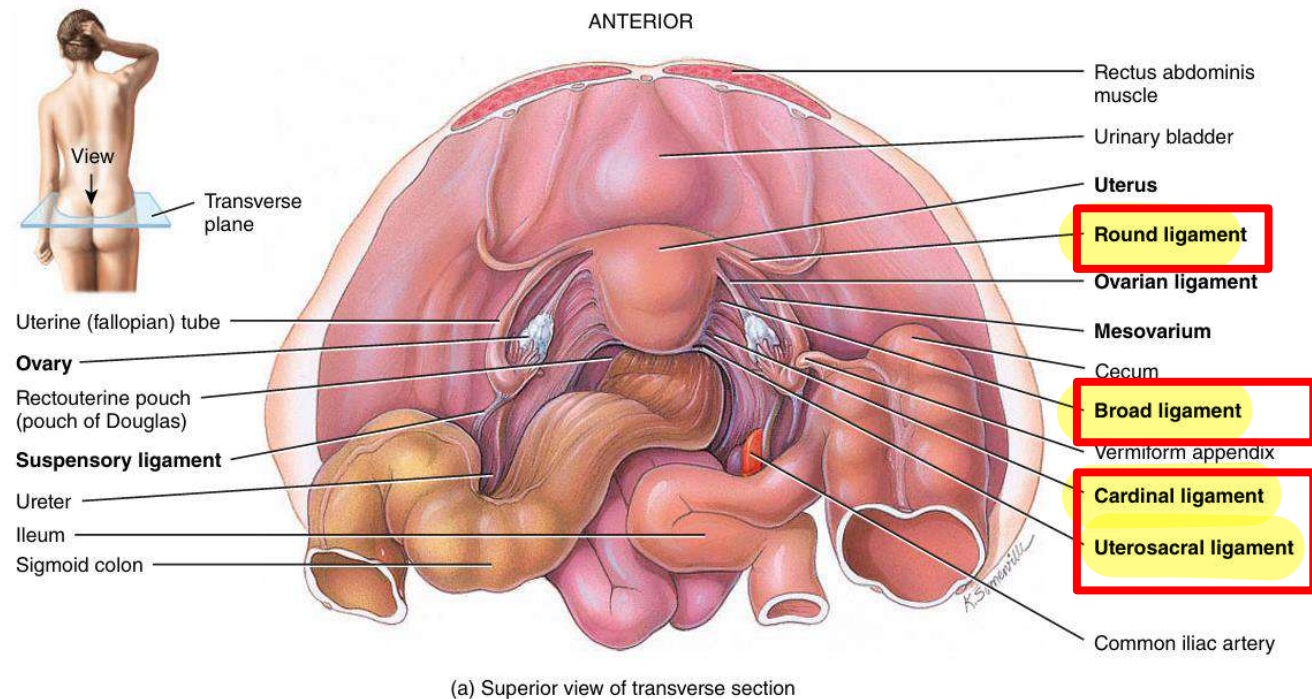
- Normally, the body of the uterus projects **anteriorly and superiorly** over the urinary bladder in a position called **anteflexion**. → flexion of body of uterus ( $\theta = 120^\circ$ )

- The cervix projects **inferiorly and posteriorly** and enters the anterior wall of the vagina at nearly a right angle →  $\theta = 90^\circ$  anteversion

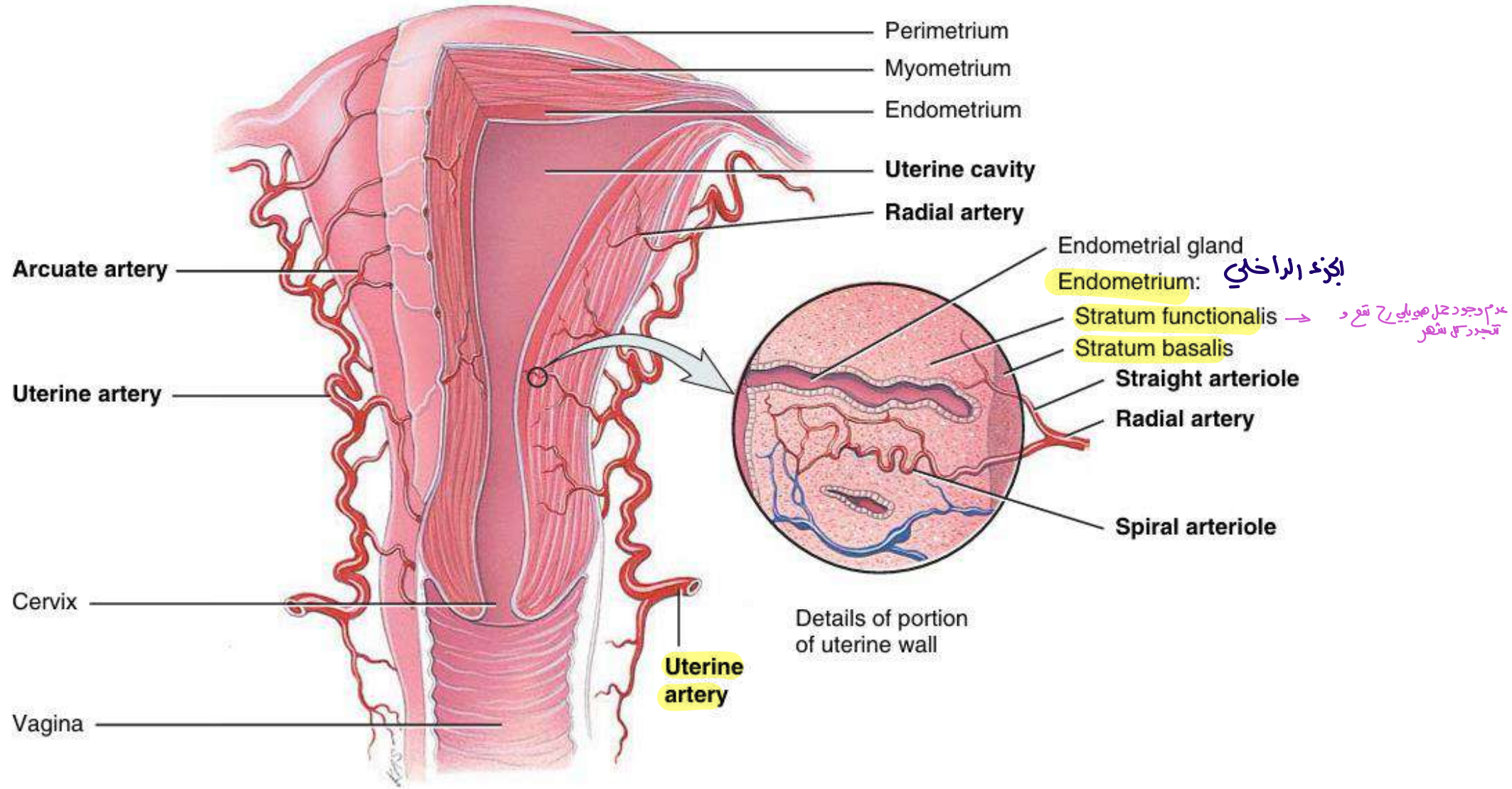


# Supporting ligaments of the uterus

- **Broad ligaments** are double folds of peritoneum attaching the uterus to either side of the pelvic cavity.
- **Uterosacral ligaments** also peritoneal extensions, lie on either side of the rectum and connect the uterus to the sacrum.
- **Cardinal ligaments:** inf. to broad ligament from the pelvic wall to the cervix and vagina.
- **Round ligaments** are bands of fibrous connective tissue between the layers of the broad ligament; they extend from a point on the uterus just inferior to the uterine tubes to a portion of the labia majora of the external genitalia.



# # Blood supply :



Anterior view with left side of uterus partially sectioned

# Vagina

- A tubular, fibromuscular canal lined with mucous membrane that extends from the exterior of the body to the uterine cervix.

من خارج الجسم

- It is about 10 cm (4 in.) long → قابل للتوسع

## Functions:

- Receptacle for the penis during sexual intercourse <sup>مستقبل</sup>
- Outlet for menstrual flow <sup>في حالة الحيض</sup>
- Passageway for childbirth.

location :-

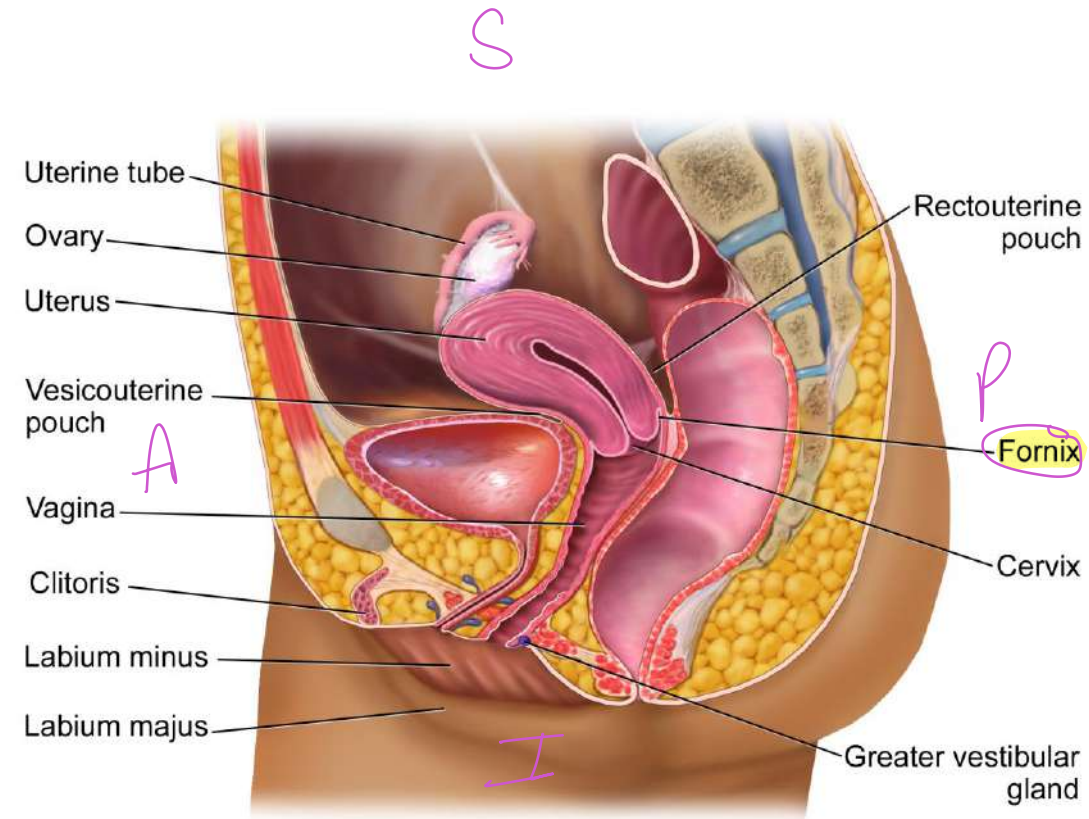
Situated **posterior to the urinary bladder** and urethra and **anterior to the rectum**, the vagina is **directed superiorly and posteriorly**, to attach to the cervix of the uterus.

تسمى بقناة الجيب

A recess called the **fornix** surrounds the vaginal attachment to the cervix. →

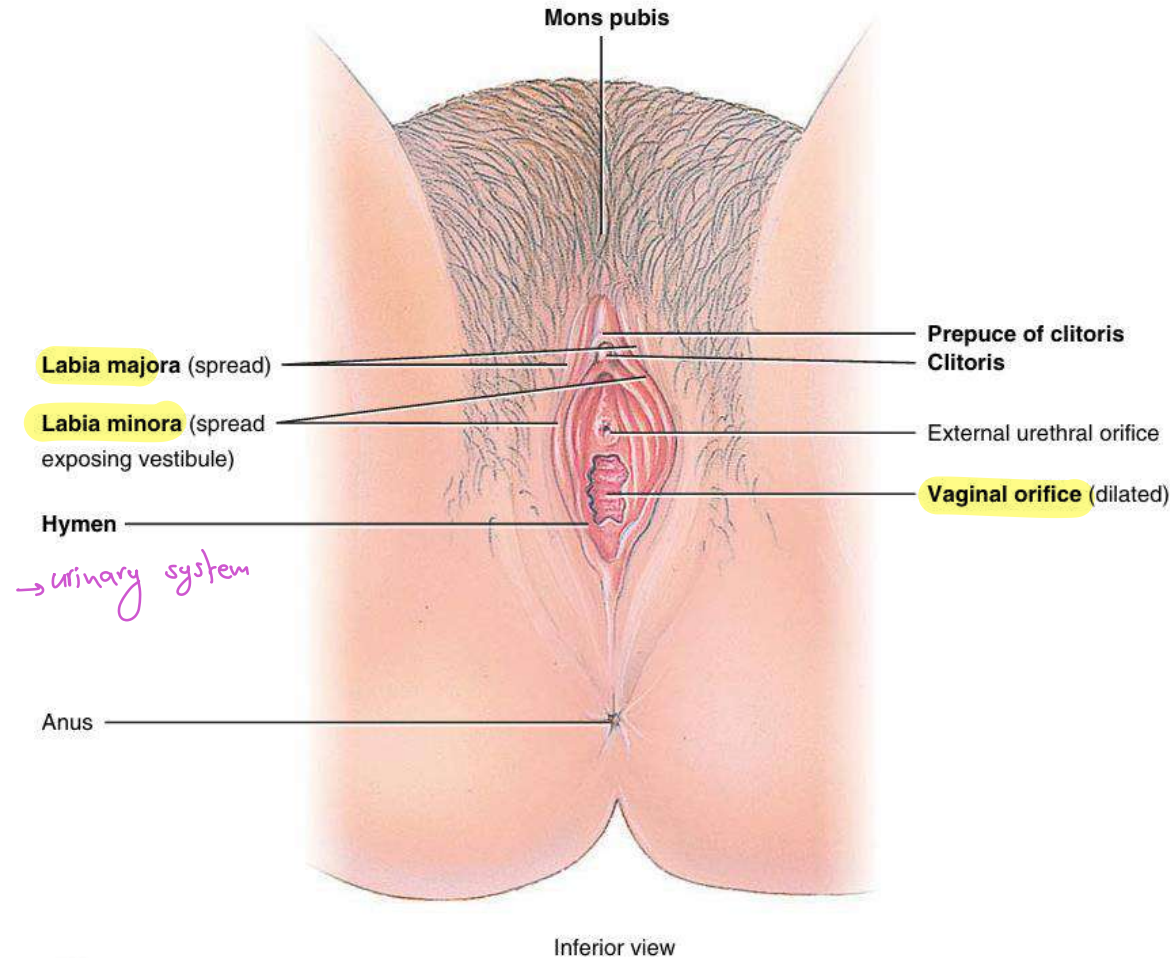
قدان يتم فيه حفظ sperm عن طريق

تتم عليه الإخصاب



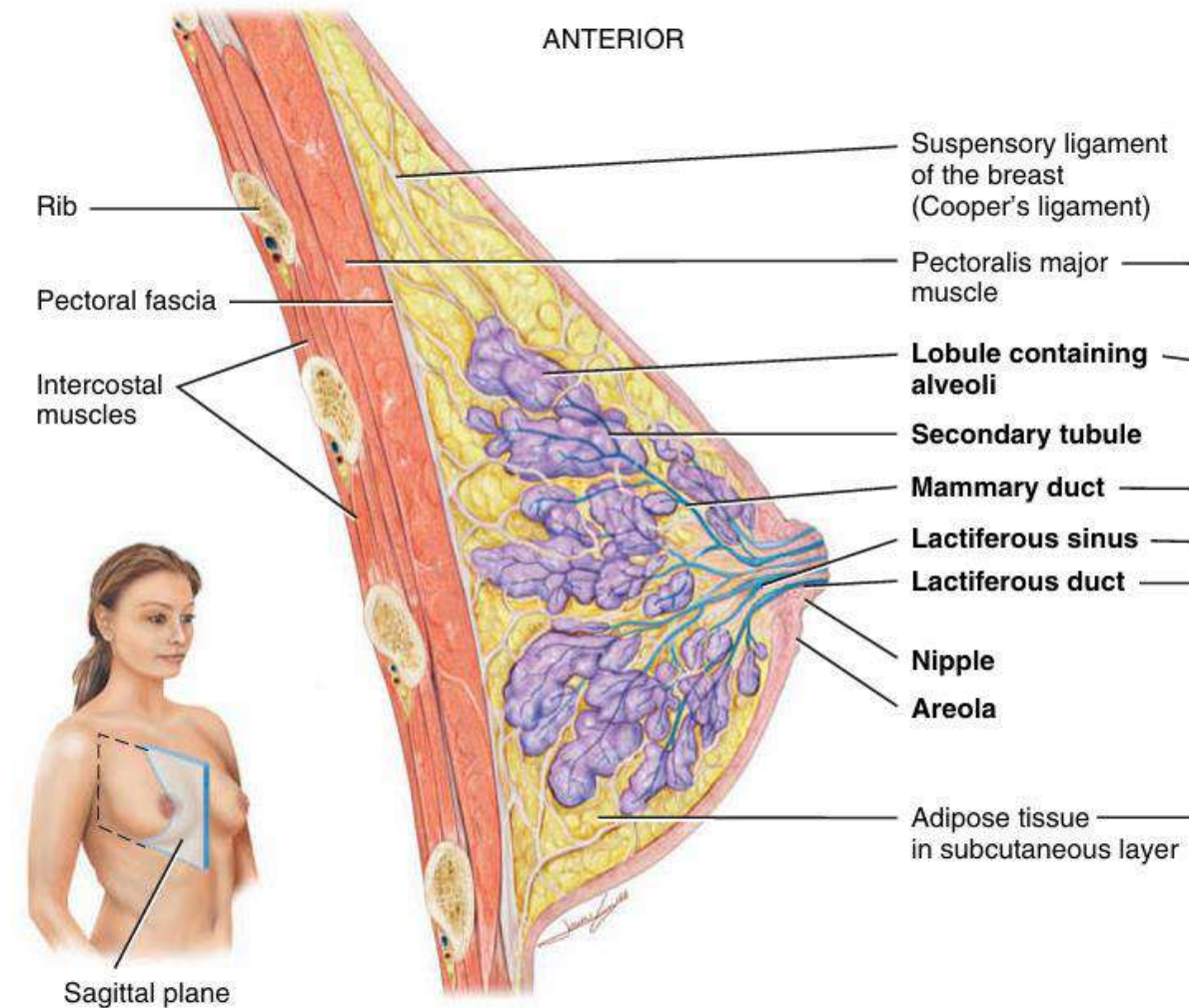
# Female External Genital Organs (vulva)

- **Mons pubis** covered by pubic hair
- **The labia majora:** two broad skin folds, lateral to the labia minora. covered by pubic hair. They are homologous to the scrotum.
- **The labia minora:** They are two thin skin folds devoid of pubic hair. The region between the labia minora is the vestibule. Within the vestibule are the **vaginal orifice**, the **external urethral orifice**, and the openings of the ducts of glands
- **Clitoris:** is a small cylindrical mass of erectile tissue and nerves located at the anterior junction of the labia minora.



# Mammary Glands

- Each breast is a hemispheric projection of variable size anterior to the **pectoralis major** and **serratus anterior muscles**. *: 200g*
- Within each breast is a mammary gland, a modified (sweat) gland that produces **milk**.
- Consists of 15 to 20 **lobes**, or compartments, separated by a variable amount of adipose tissue. In each lobe are several smaller compartments called **lobules**, composed of grapelike clusters of milk-secreting glands termed **alveoli**

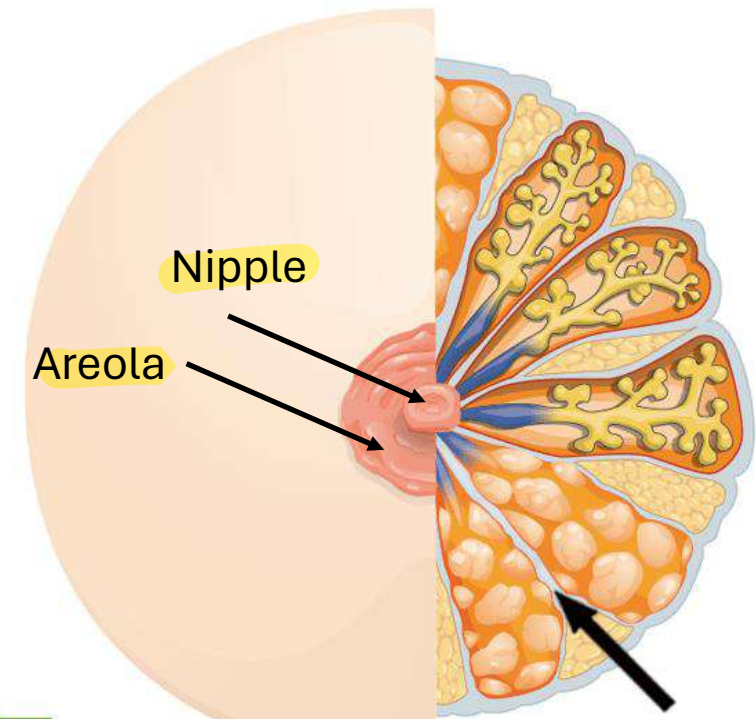


(a) Sagittal section



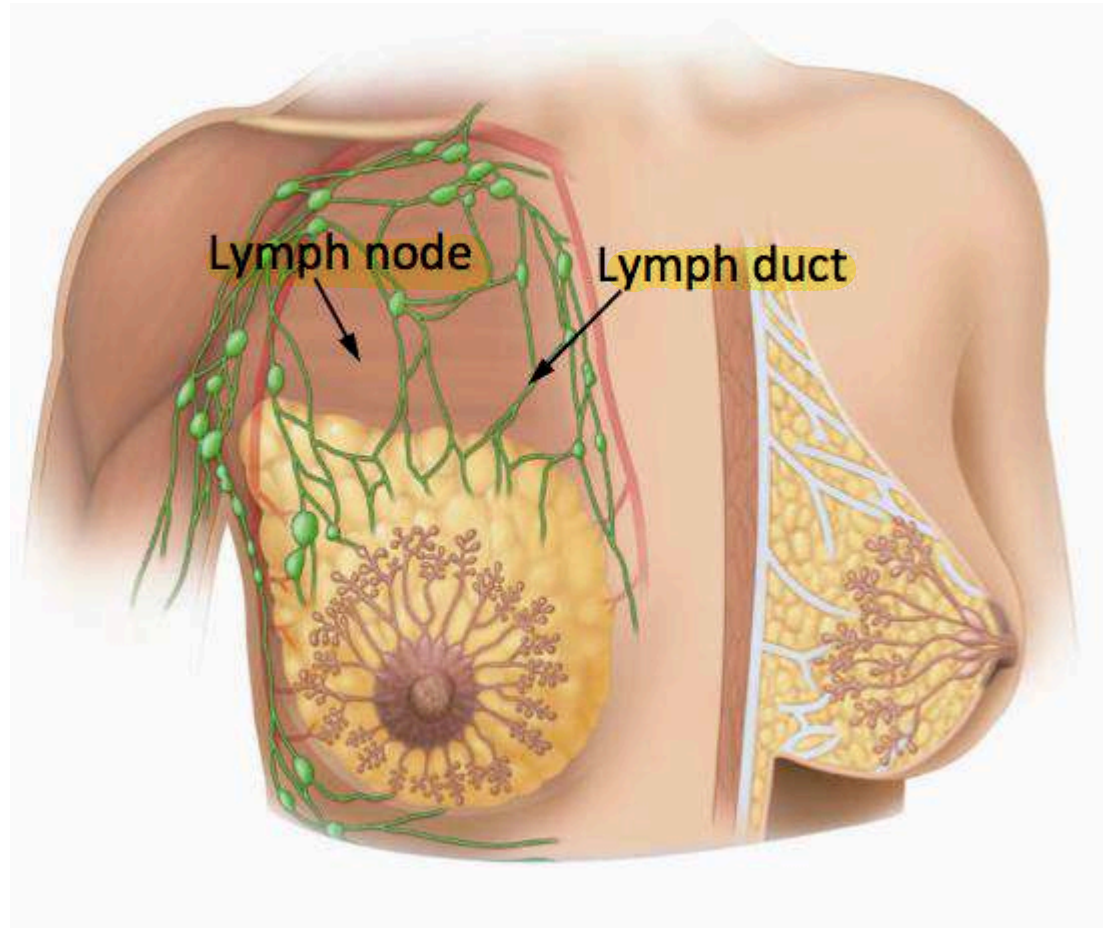
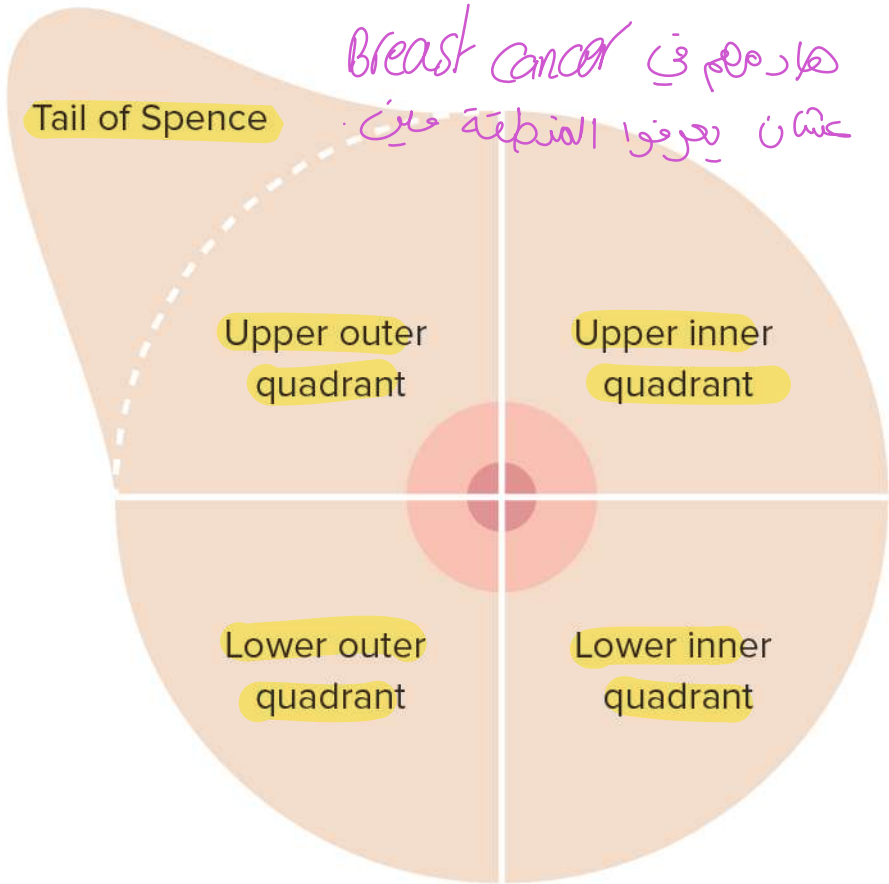
# Mammary Glands

- Each breast has one pigmented projection, **the nipple**, which has a series of closely spaced openings of ducts called **(lactiferous ducts)**, where milk emerges. The circular pigmented area of skin surrounding the nipple is called **the areola**
- Strands of connective tissue called **the suspensory ligaments of the breast** (Cooper's ligaments) run between the skin and fascia and support the breast.
- **Functions:** synthesis, secretion, and ejection of milk; these functions, called lactation, are associated with pregnancy and childbirth.



suspensory ligaments of the breast

هناك في Breast cancer  
عشان يعرفوا المنطقة حين



- Thank you and best wishes!