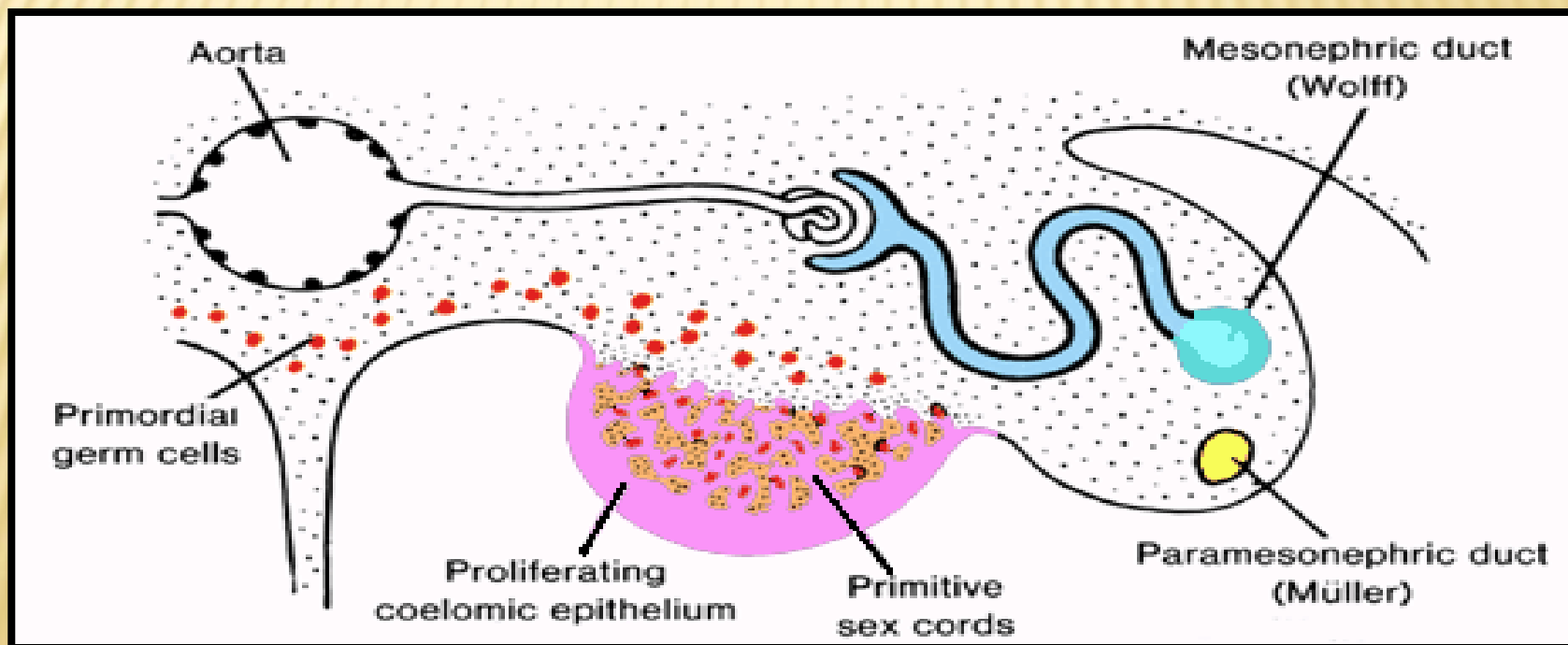
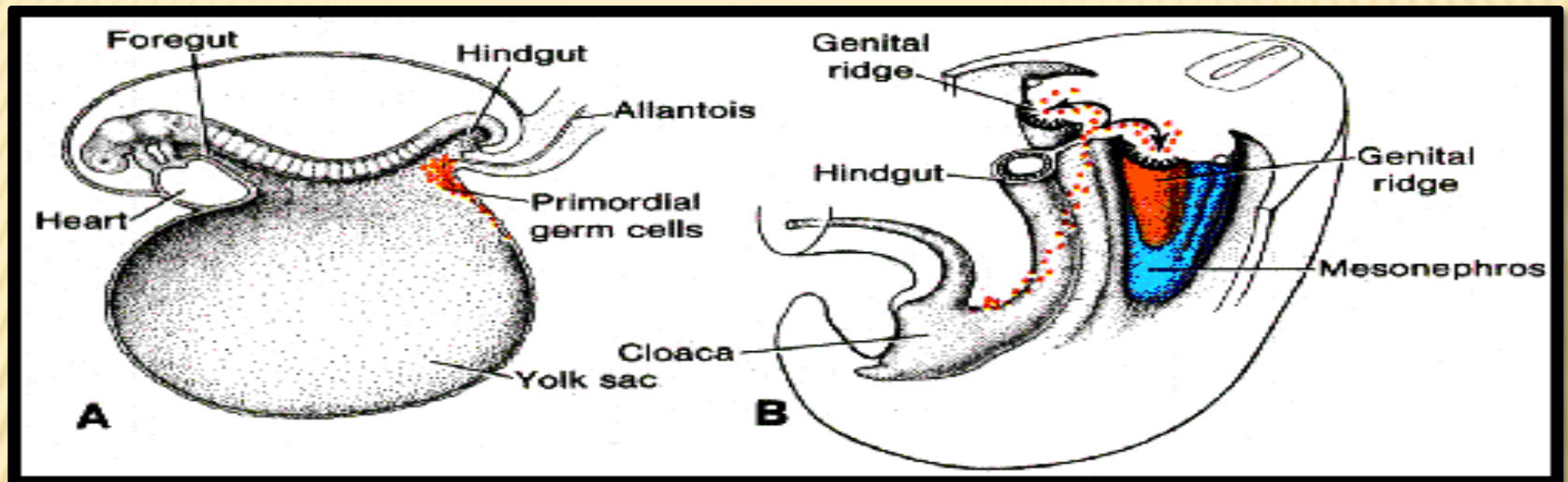


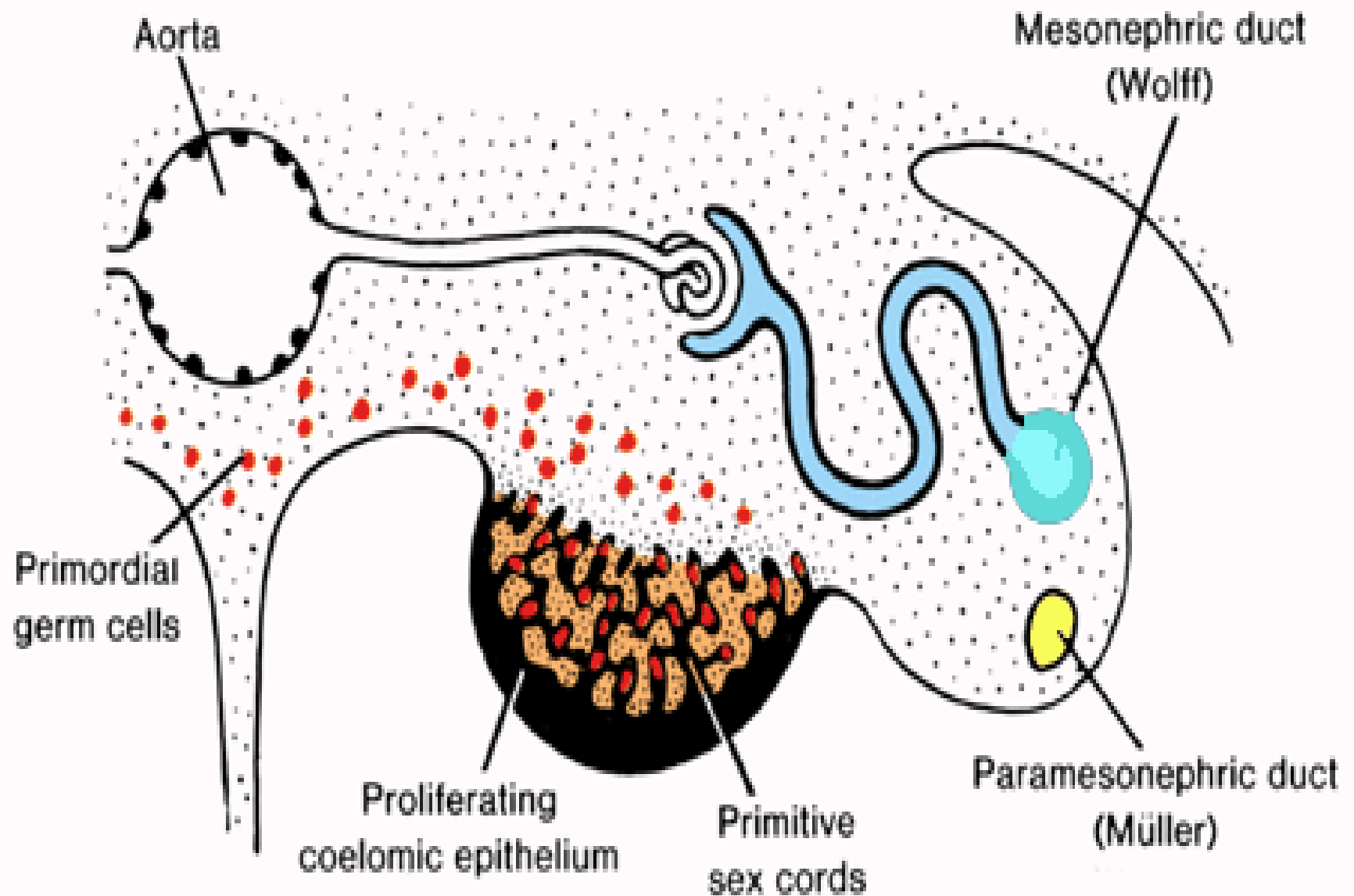
DEVELOPMENT OF GENITAL SYSTEM

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GENITAL SYSTEM

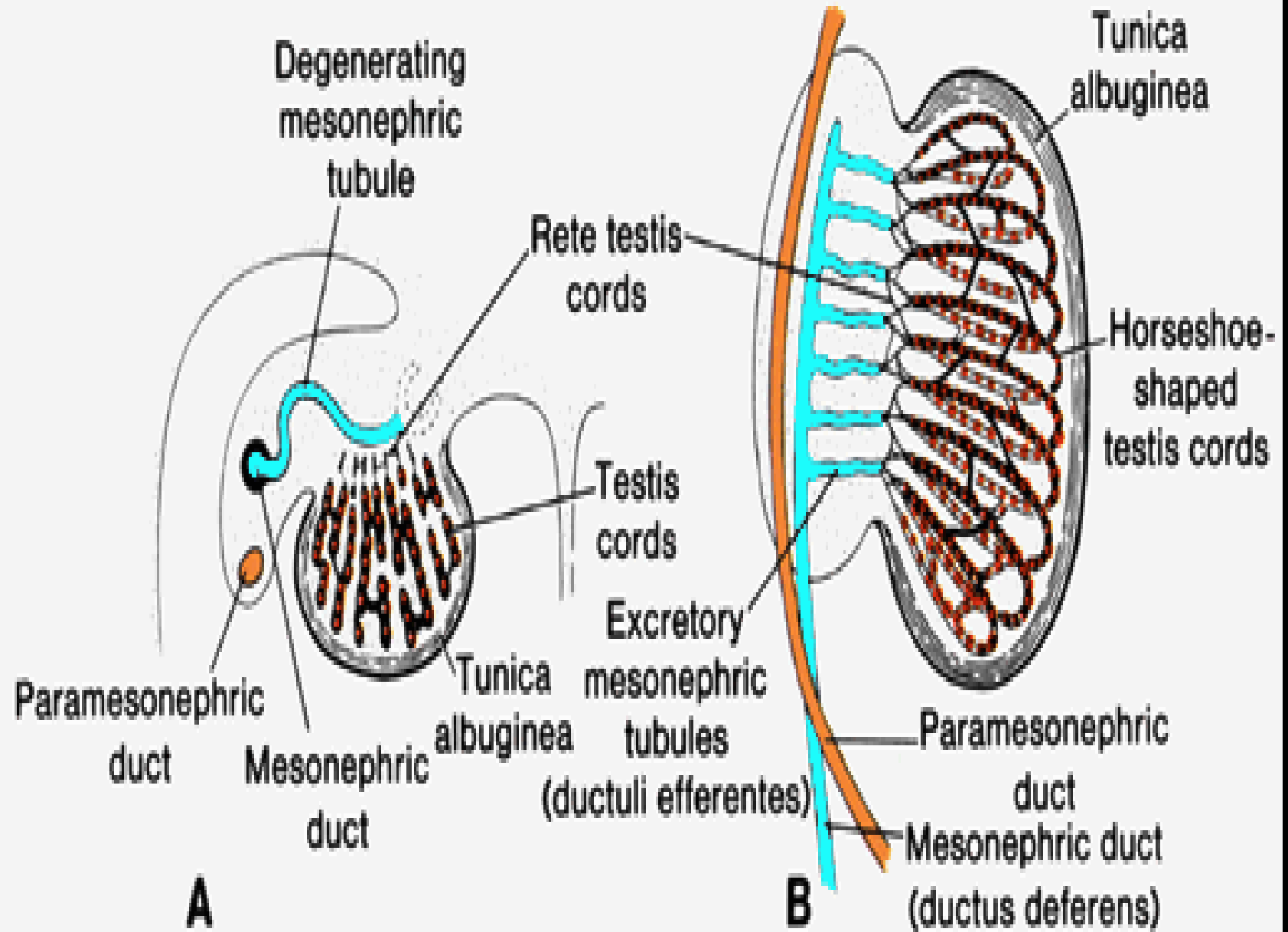
- The primitive gonads develop on 5th-6th week of gestation.
- They appear as elongated swellings called **Genital ridges** by the proliferation of coelomic epithelium which covers the medial surface of the nephrogenic cord (**Genital ridge is formed medial to the nephrogenic cord**).
- Primordial germ cells (**PGCs**) migrate from the endoderm of the dorsal wall of developing hindgut along the dorsal mesentery of the gut towards genital ridge.
- But before invasion of the PGCs into the genital ridge, the ridge is converted into primitive sex cords. This is **INDIFFERENT GONADAL STAGE (6th week)**

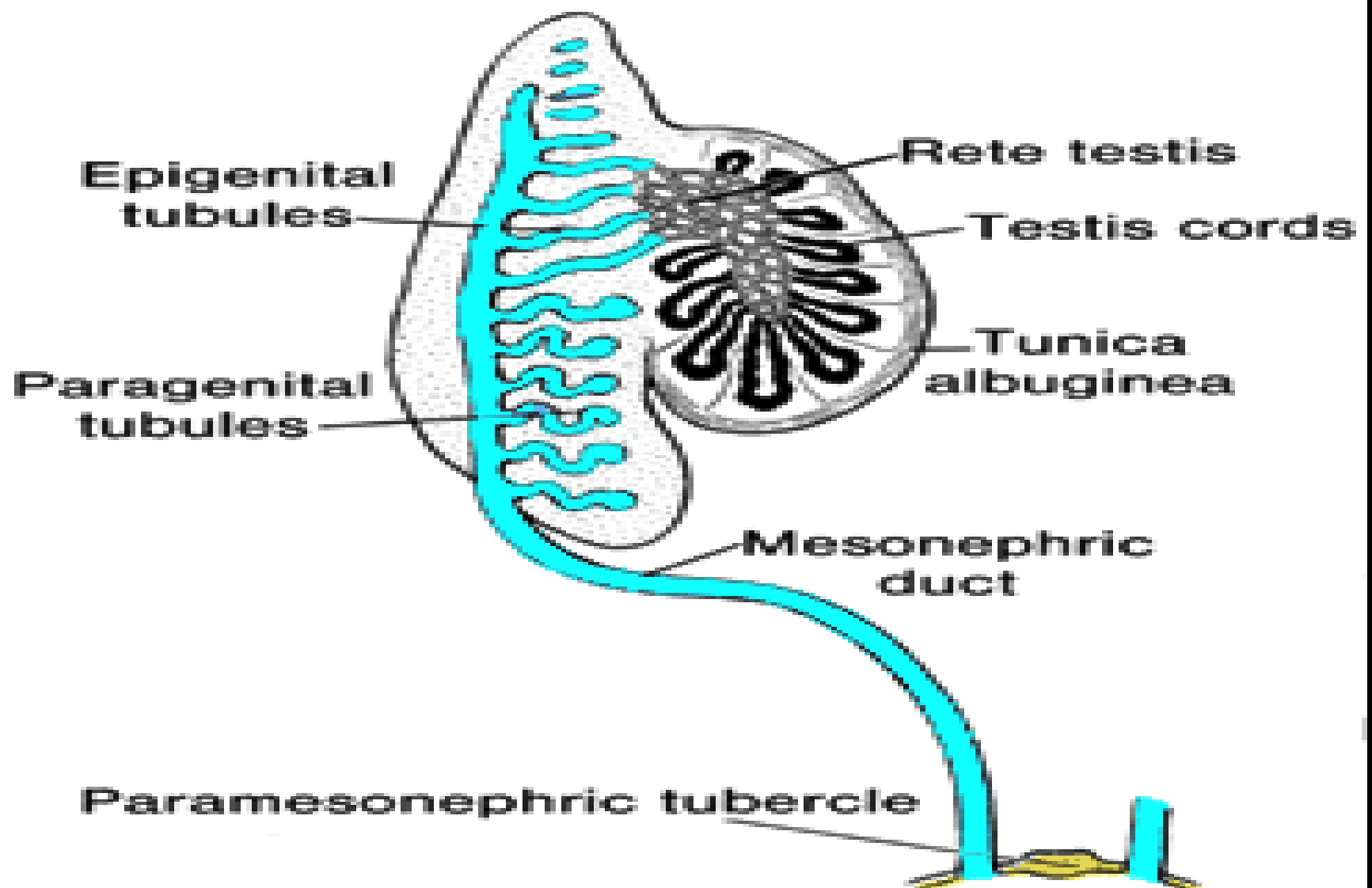




IF TESTIS IS TO BE FORMED-

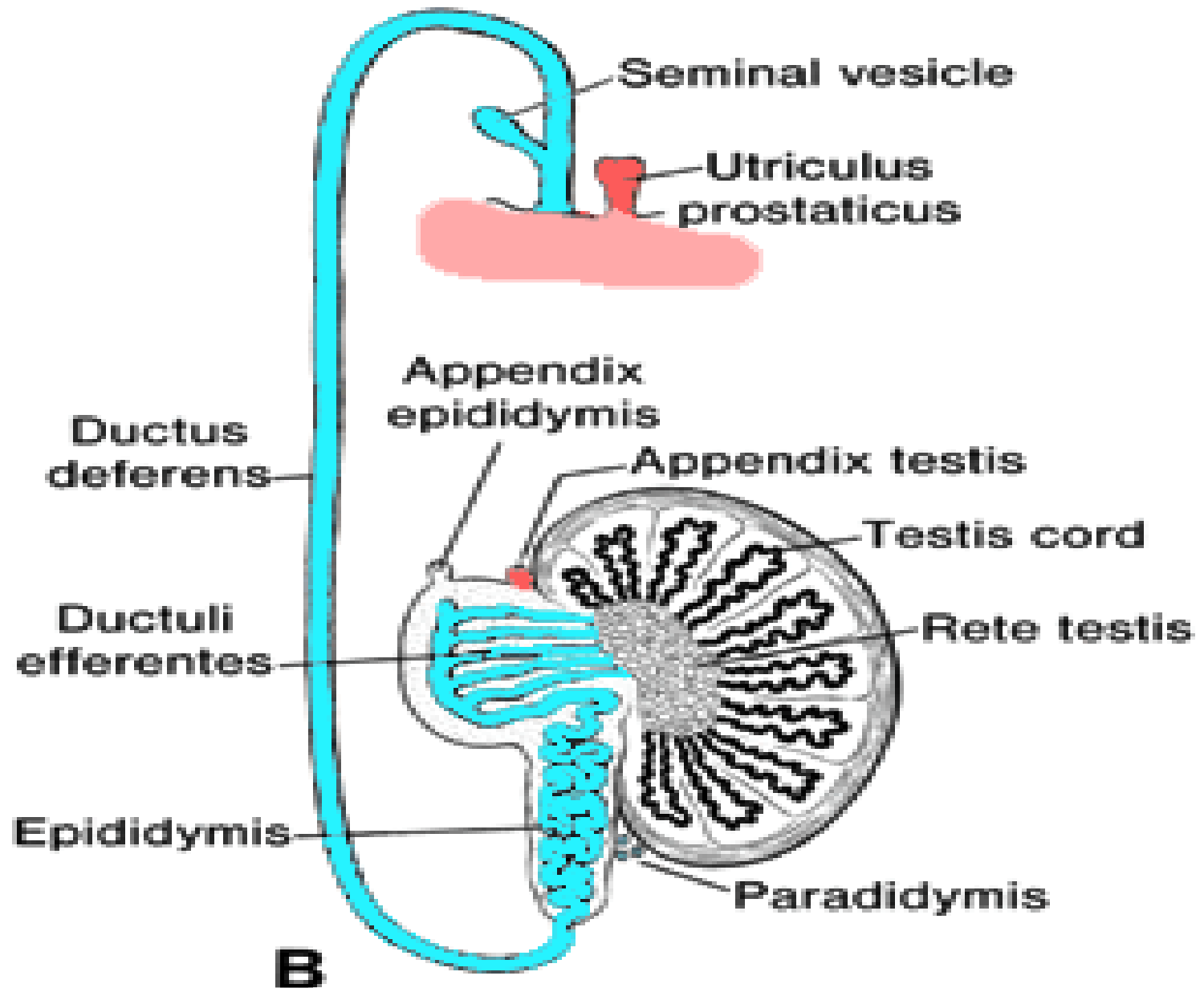
- PGCs gets accommodated into the medulla of the primitive sex cords, they become hair-pin like U-shaped structure, becomes canalised which give rise to **seminiferous tubules**. PGCs gets incorporated into the formed seminiferous tubules.
- Periphery of these tubules form a mesh work which lead to **rete testis**.
- PGCs differentiates into **spermatogonia**.
- **Leydig's cells** are mesodermal in origin while the **Sertoli cells** are originated from the surface cells.
- The surrounding mesenchymal cells form the Tunica albuginea, mediastinum testis and septula testis.





DUCT SYSTEM OF MALE GENITALIA

- The development of testis takes place in close association with the mesonephros and thereby the mesonephric tubules and mesonephric duct.
- The terminal parts of the seminiferous tubules join to form rete testis.
- Mesonephric tubules transforms into ductuli efferenti.
- Wolffian duct/Mesonephric duct is responsible for the formation of male duct system (Epididymis, Vas deferens, ducts of seminal vesicles.)



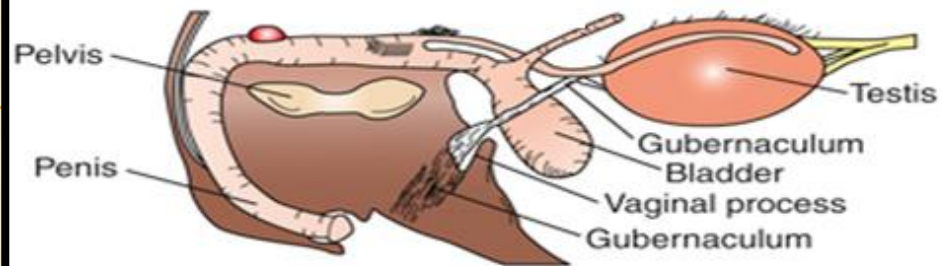
DESCENT OF TESTIS

- Each testis develops retroperitoneally at the dorsal abdominal wall (genital ridge) in relation to the lumbar region.
- It reaches the deep inguinal ring at about 7th month of intrauterine life and descends in the scrotum before birth.

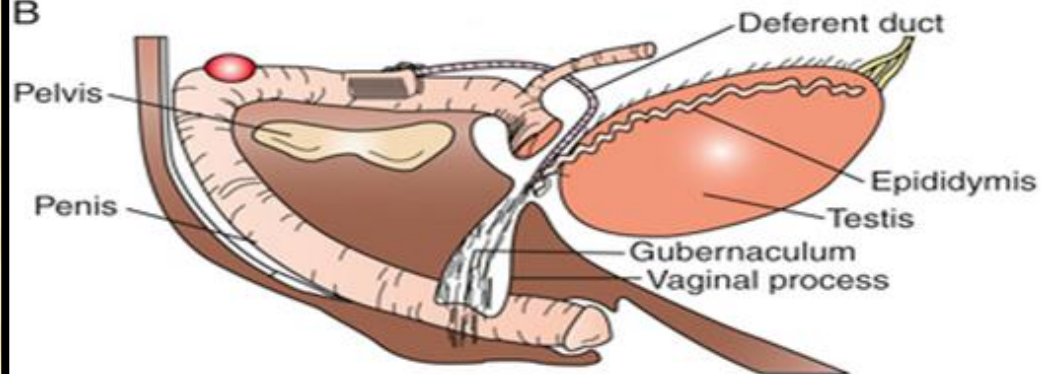
■ Factors responsible for the descent of testis are:

1. Increased Intra-abdominal pressure leads to the out pouching of abdominal wall and development of scrotum.
2. Shortening of Gubernaculum testis- it is a fibromuscular band which extends from the caudal pole of testis to the scrotum. Shortening of this structure widens the passage and helps in the descent of testis.
3. Active growth of Processus vaginalis- from the ventral abdominal wall a diverticulum from the peritoneum extend actively into the scrotal sac known as processus vaginalis. During descent, the testis partially invaginates in it. This process later becomes the **Tunica vaginalis**.
4. Action of hormones, mainly the testicular hormones.

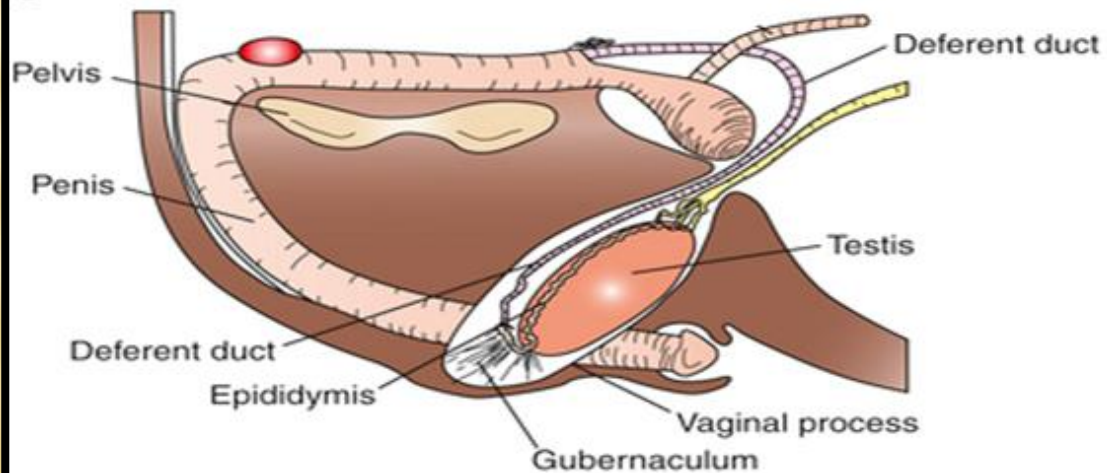
A



B



C



IF OVARIES ARE TO BE FORMED

- The primitive sex cords are broken by the invading mesenchymal cells.
- **PGCs** occupy the cortex of sex cords & differentiate into **oogonia**; surrounded by mesenchymal tissue. Thus follicles are formed.
- The follicular and interstitial cells are formed from the surrounding mesenchymal tissues.
- The **Mullerian ducts** are formed by the invagination of the coelomic epithelium. They fuse in the mid line to form the **Utero-vaginal canal**.

DUCT SYSTEM OF FEMALE GENITALIA

At 6 weeks

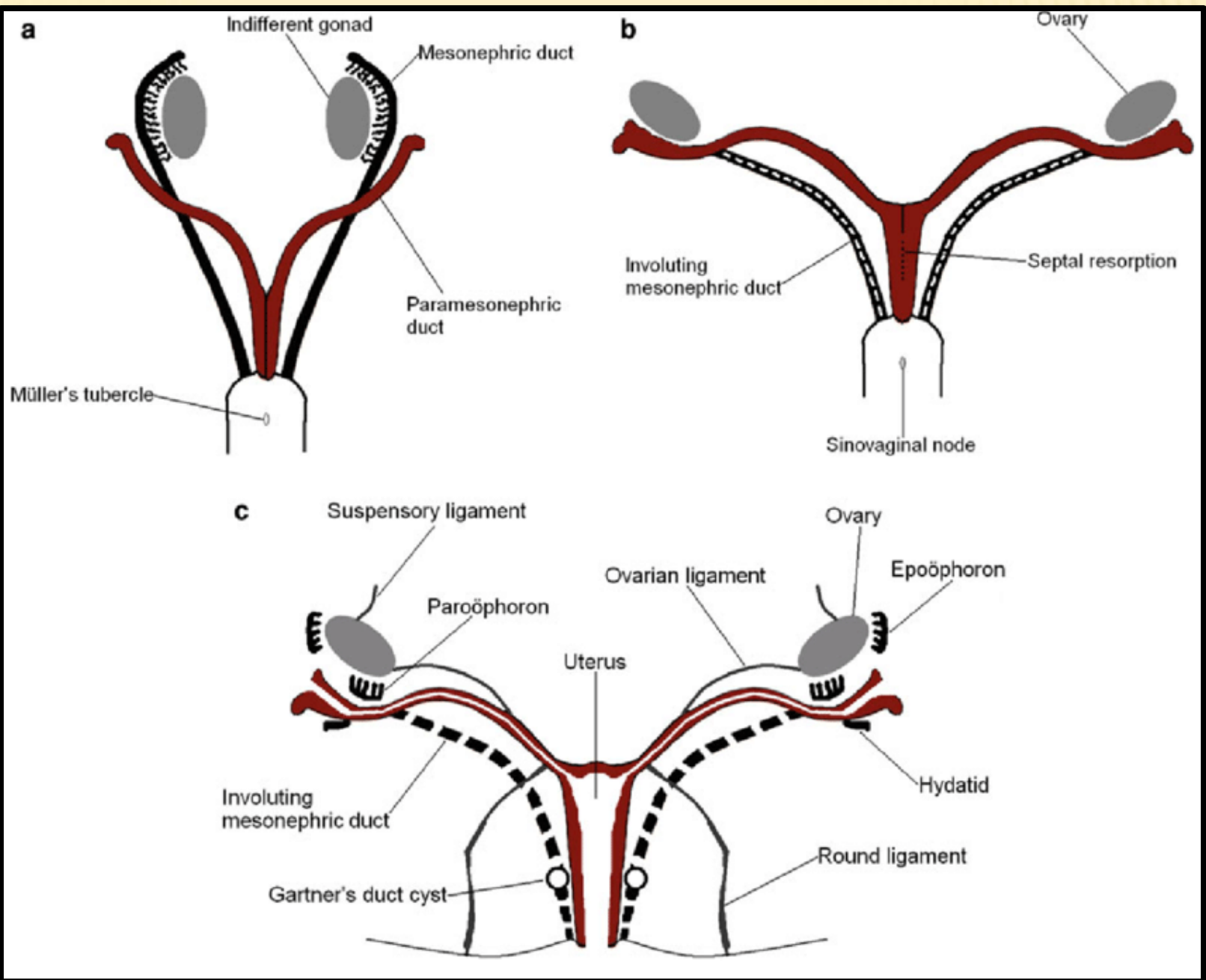


Mullerian duct/ Paramesonephric duct

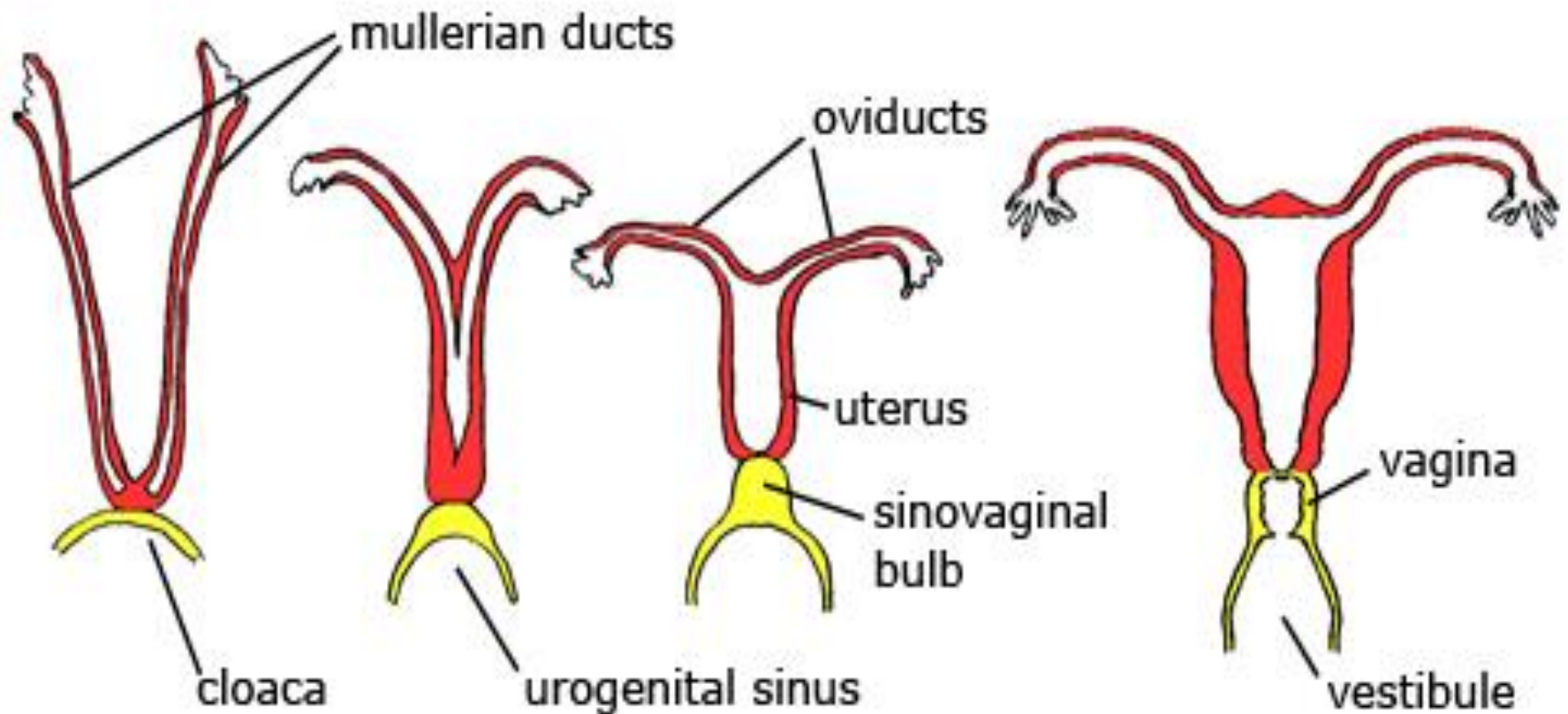


- Cephalic part of duct— Forms Oviduct
- Intermediate part of duct— Forms Horn of Uterus
- Cranial part of Utero-vaginal canal— Forms Body of Uterus
- Middle part of Utero-vaginal canal— Cervix
- Caudal part of Utero-vaginal canal—Cranial part of vagina

Uro-genital sinus--- Forms Caudal part of Vagina, vulva and vestibule.



Embryonic formation of female reproductive system

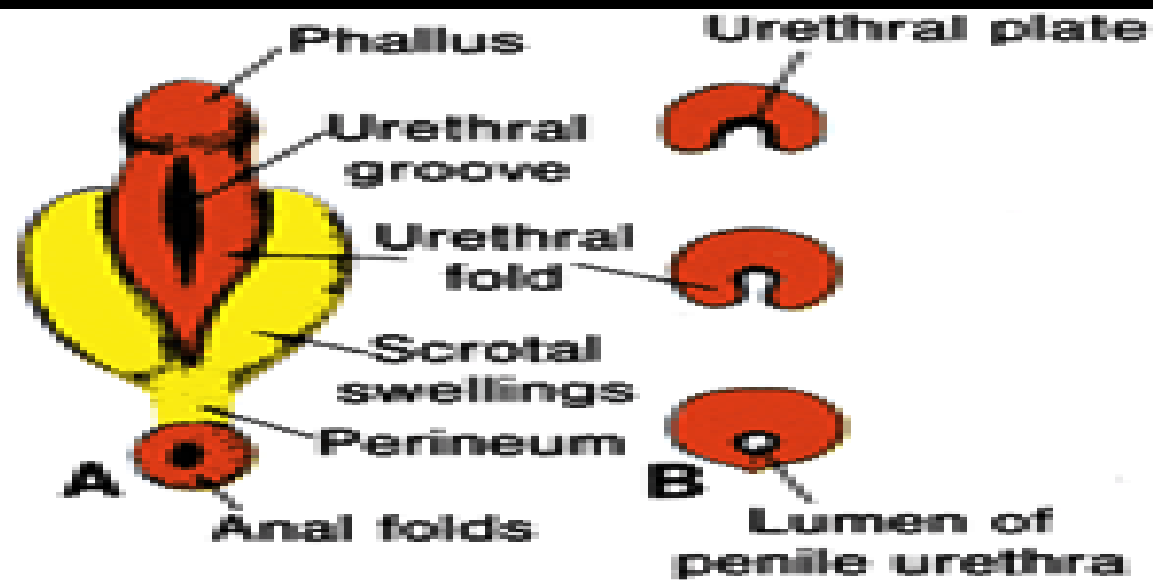
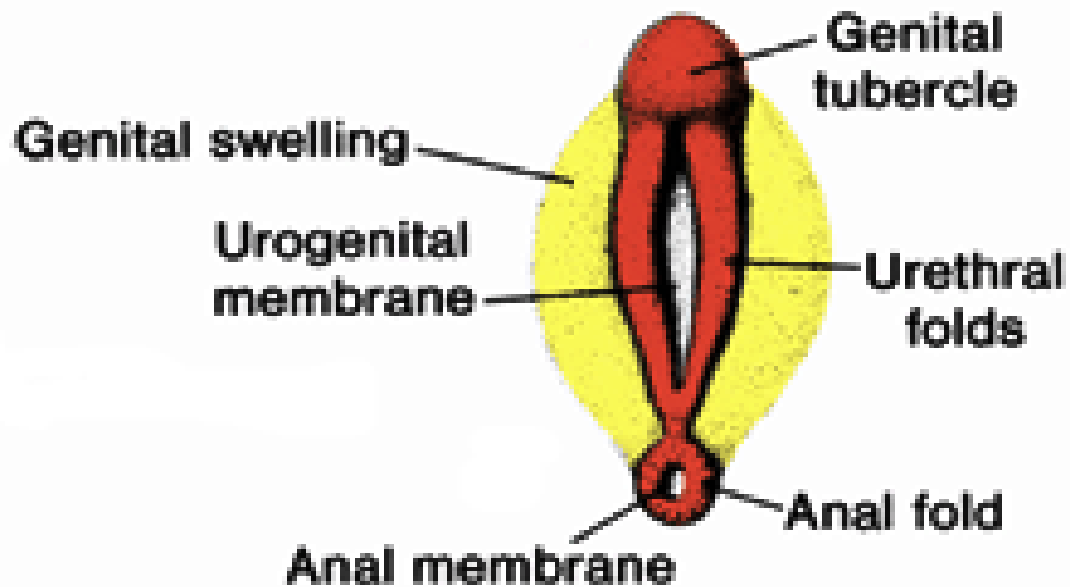


DEVELOPMENT OF EXTERNAL GENITALIA

- The **urorectal septum** subdivides the cloaca into dorsal rectum and ventral **uro-genital sinus**.
- The **UGS** remains externally covered by the **uro-genital membrane**.
- The primitive streak remain dorsal to the cloaca.
- A pair of **genital folds** or primitive urethral folds are formed by the accumulation of mesodermal cells which migrate from the primitive streak to the two sides of cloacal membrane.
- These folds are arranged in a longitudinal manner and give rise to three elevated structures.

-
- These elevated structures are: **Right and Left genital swellings** and a **genital tubercle**.
 - **In males:**
 - The genital swellings enlarge on either side and forms the **scrotal sacs**.
 - The genital tubercle elongates forward between the primitive scrotal sacs. At this stage it is called **Phallus**. It enlarges further to form **Penis**.

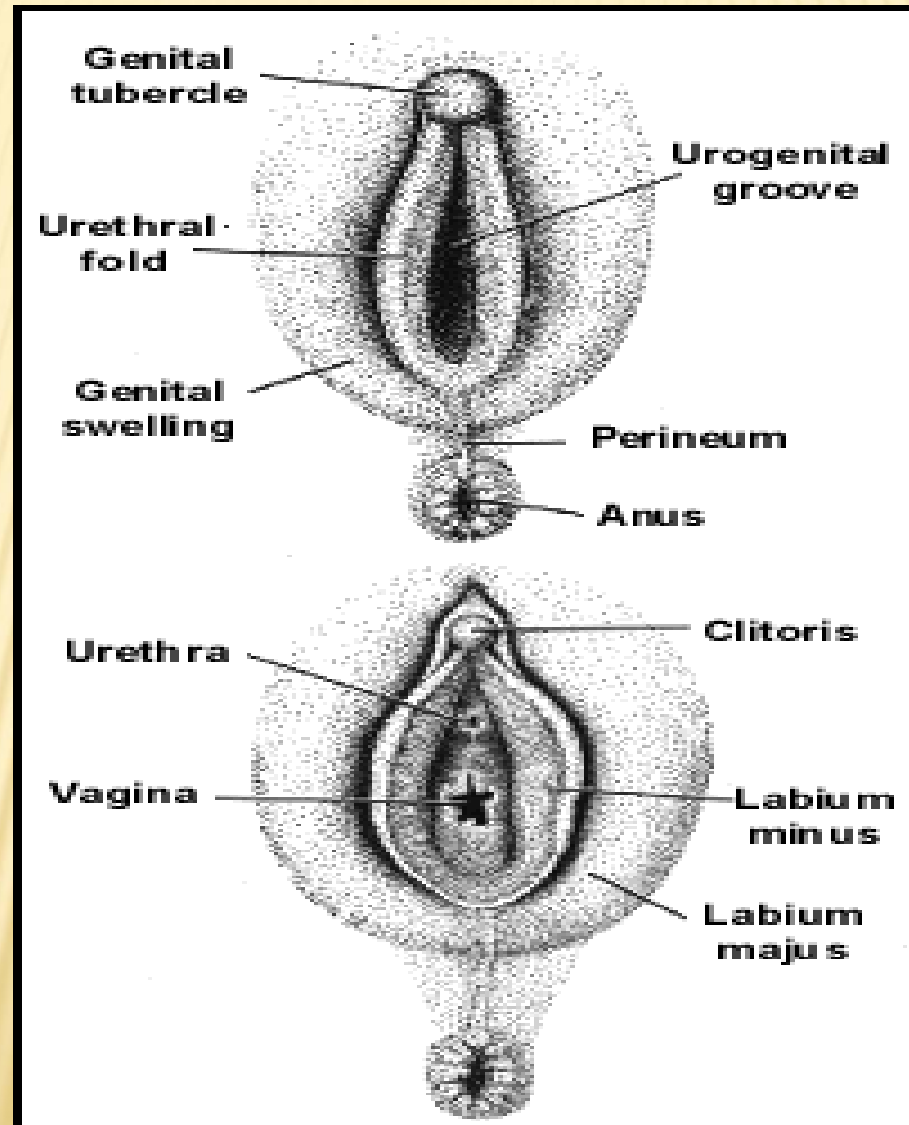
MALE



- In females:

- The uro-genital membrane ruptures, and the uro-genital sinus continues with the exterior to form the **vestibule**.
- The primitive urethral folds give rise to **labia minora**.
- The paired genital swellings elongate on either side to form the **labia majora**. Their dorsal and ventral ends fuse to form the dorsal and ventral commissures respectively.
- The genital tubercle forms the **clitoris**.

FEMALE



ASSIGNMENT:

- A well labelled pictorial representation of development of the genital system in practical note book.

THANKS

