

وسهلا

أهلا

يُمنع أخذ السلايدات بدون  
إذن المحرر واي اجراء  
يخالف ذلك يقع تحت  
طائلة المسؤولية القانونية



# الأستاذ الدكتور يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب - جامعة الزقازيق - مصر

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اليوتيوب د. يوسف حسين

Prof. Dr. Youssef Hussein Anatomy - YouTube

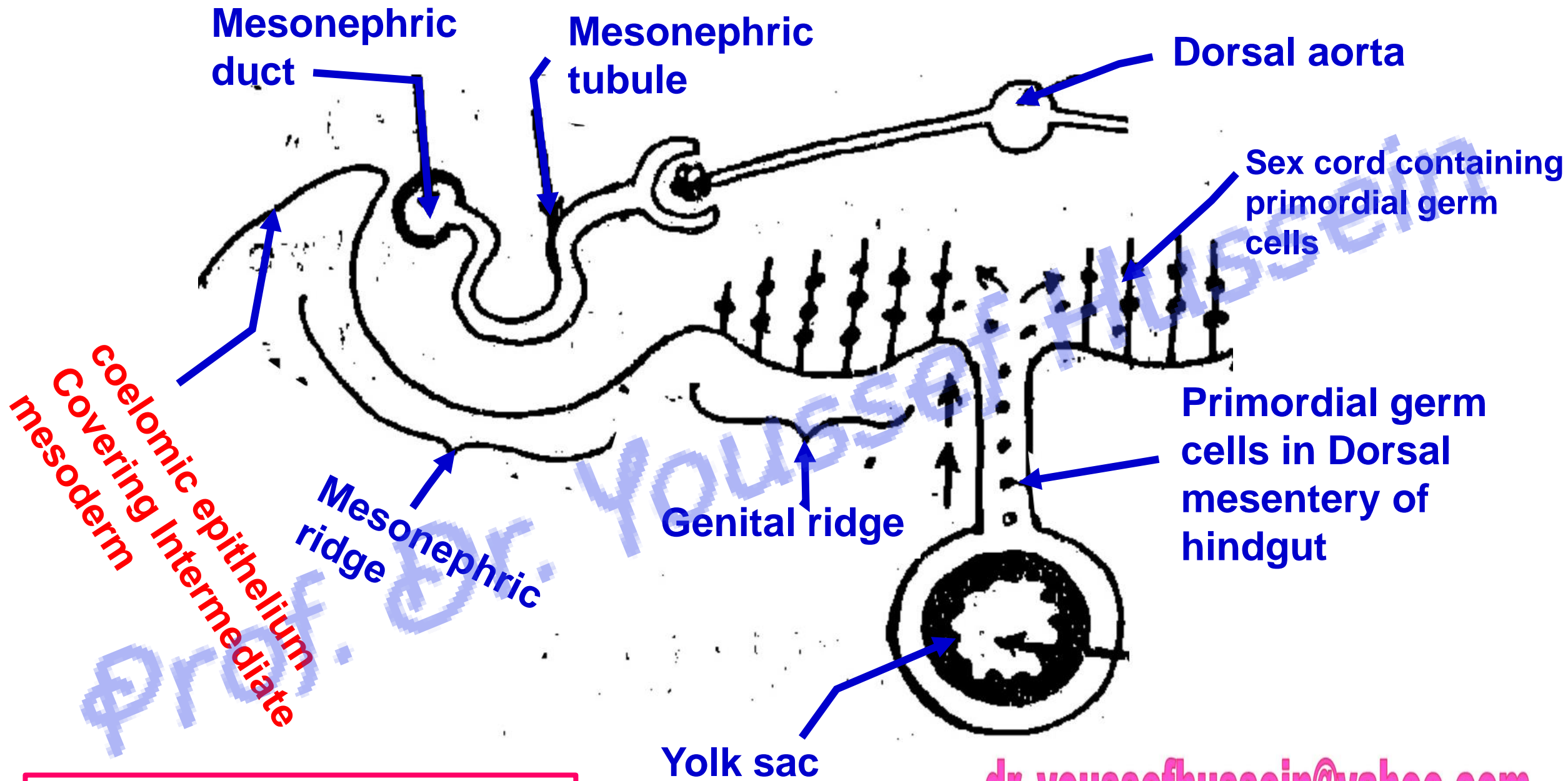
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# Development of gonads (Testis & Ovary)

Prof. Dr. Youssef Hussein

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**Undifferentiation Stage**

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## • DEVELOPMENT OF THE GONADS

\* The gonads, in both sexes, pass into 2 stages of development:

### A- Undifferentiation Stage:

\* In the first stage of gonadal development, it is impossible to distinguish between testis and ovary.

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- \* **Paired Genital ridges** arise from the **coelomic epithelium covering intermediate mesoderm medial** to the mesonephric ridge, (on each side).
- \* Simultaneously, the **epithelium of genital ridge** proliferate and form **sex cords** opposite the **middle part** of the mesonephric tubules
- \* The **primordial germ cells migrate** from the endoderm lining **yolk sac** to the sex cords of **genital ridges** via dorsal mesentery of hindgut

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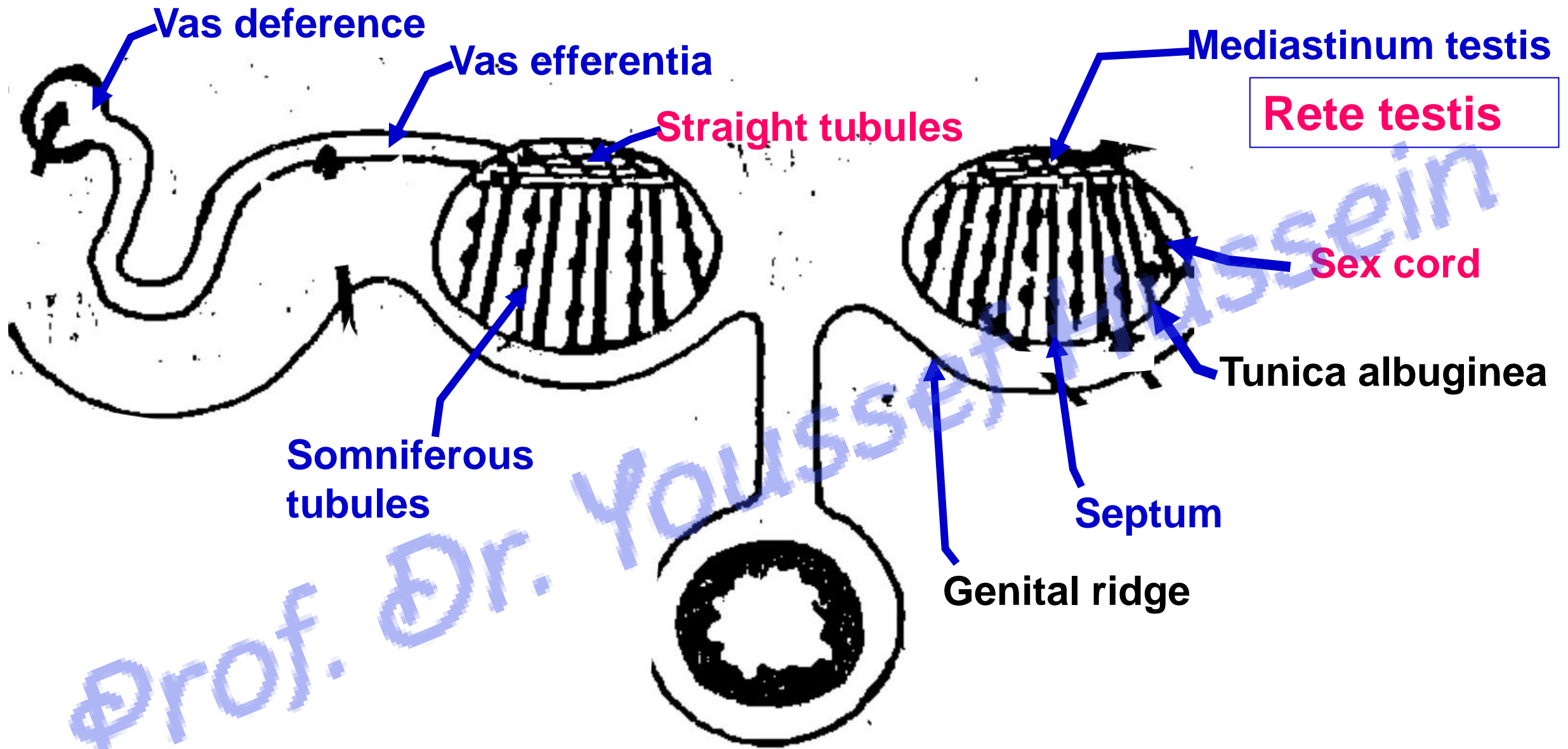
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# Development of Testis

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## \* DEVELOPMENT OF THE TESTIS

- \* At the **6th week** of intrauterine life under the effect of Y-chromosome that has **testis detecting factor** (**SRY gene (Sex-determining region Y protein)**).
- \* The **sex cords** will be separated from genital ridge by a fibrous capsule (**tunica albuginea**).
- \* The tunica albuginea send connective tissue **septa** dividing the testis into 200-300 compartments.
- \* Each compartment contains **2-3 cords**.
- \* The **septa fuse** at the dorsal border of the testis to form the **mediastinum testis**.
- \* The **sex cords** communicate with each other at mediastinum testis forming **rete testis**.
- \* The **sex cords** canalize to form **seminiferous tubules**.
- \* The **rete testis** will be canalized forming **straight tubules**. These straight tubules will join with the **vasa efferentia** (**remnant of middle of mesonephric tubule**).

- **Descent of the Testis**

- **Aim of descend:** Because the process of spermatogenesis requires degree of temperature lower than that of the abdomen
- The testes descend through inguinal canal into the scrotum **by age 3 months** of pregnancy, In most cases, the testes pass down by **age 6 months without any treatment.**

- **Factors controlling the descent:**

- **Gubernaculum** (after mesonephros has atrophied) Cranially it has its **origin** at the testis and **inserts** in the region of the genital swelling (future scrotum).
- **Formation of the processes vaginalis** on which testes will slide through inguinal canal.
- Human chorionic gonadotrophin hormone from placenta, testosterone and Anti Mullerin Hormone.
- **Increasing intra-abdominal pressure** due to organ growth.

- **Developing of the cells:**

- 1- **Primordial germ cells** give the spermatogonia.
- 2- **Coelomic epithelium** gives rise the supporting cells of Sertoli.
- 3- **Mesenchymal cells**, give rise the interstitial cells of Leydig.

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- **Congenital anomalies of the Testis:**

**1- Agenesis** of one or both testis. Bilateral agenesis resulted in sterility.

**2- Primordial Germ cell aplasia** (No spermatogonia) either degeneration or failure of migration

**3- Abnormality in the descent of the testis:**

**a- Cryptorchidism** (Undescended testis) remains in the abdomen. It causes sterility due to atrophy of spermatogenic cells or malignancy.

**b- Incomplete descent:** It may be found in inguinal canal or superficial inguinal ring.

**c- Ectopic testis:** the testis descends to an abnormal site.

**4- Klinefelter syndrome (44+ XXY) leads to sterility**

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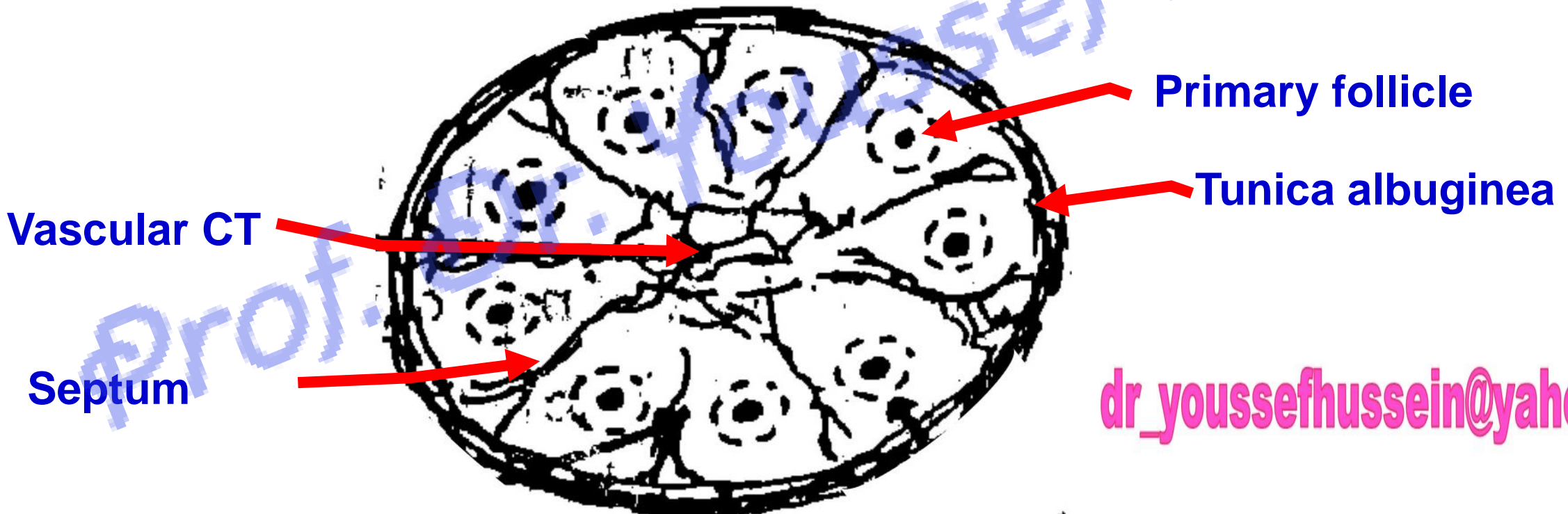
# Development of Ovary

Prof. Dr. Youssef Hussein

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## • DEVELOPMENT OF THE OVARY

- \* The sex cords will be separated by a fibrous capsule (**tunica albuginea**).
- \* The sex cords in the **medulla** (center) **degenerated** and replaced by **a vascular connective tissue**.
- \* **In the 3<sup>rd</sup> month**, the **sex cords in the cortex** (peripheral): flat cells surrounding each primordial germ cells (oogonia) forming **primary follicle**.



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- **Congenital Anomalies of the Ovary:**

**1- Agenesis** of one or both ovaries.

**2. Primordial Germ cell aplasia** (**No** oogonia) either degeneration or failure of migration

**3. Ovarian hypoplasia** (Turner's syndrome): (44+x0).

**4. Ectopic ovary:** It may be found in abnormal site.

**5. Hermaphroditism (rare):**

**a- True hermaphroditism (Ovo-testis):** both ovarian and testicular tissues are present.

**b- Pseudo hermaphroditism:**

- **Male Pseudo hermaphroditism** (44+XY): fetus has testis and female external genital organs.

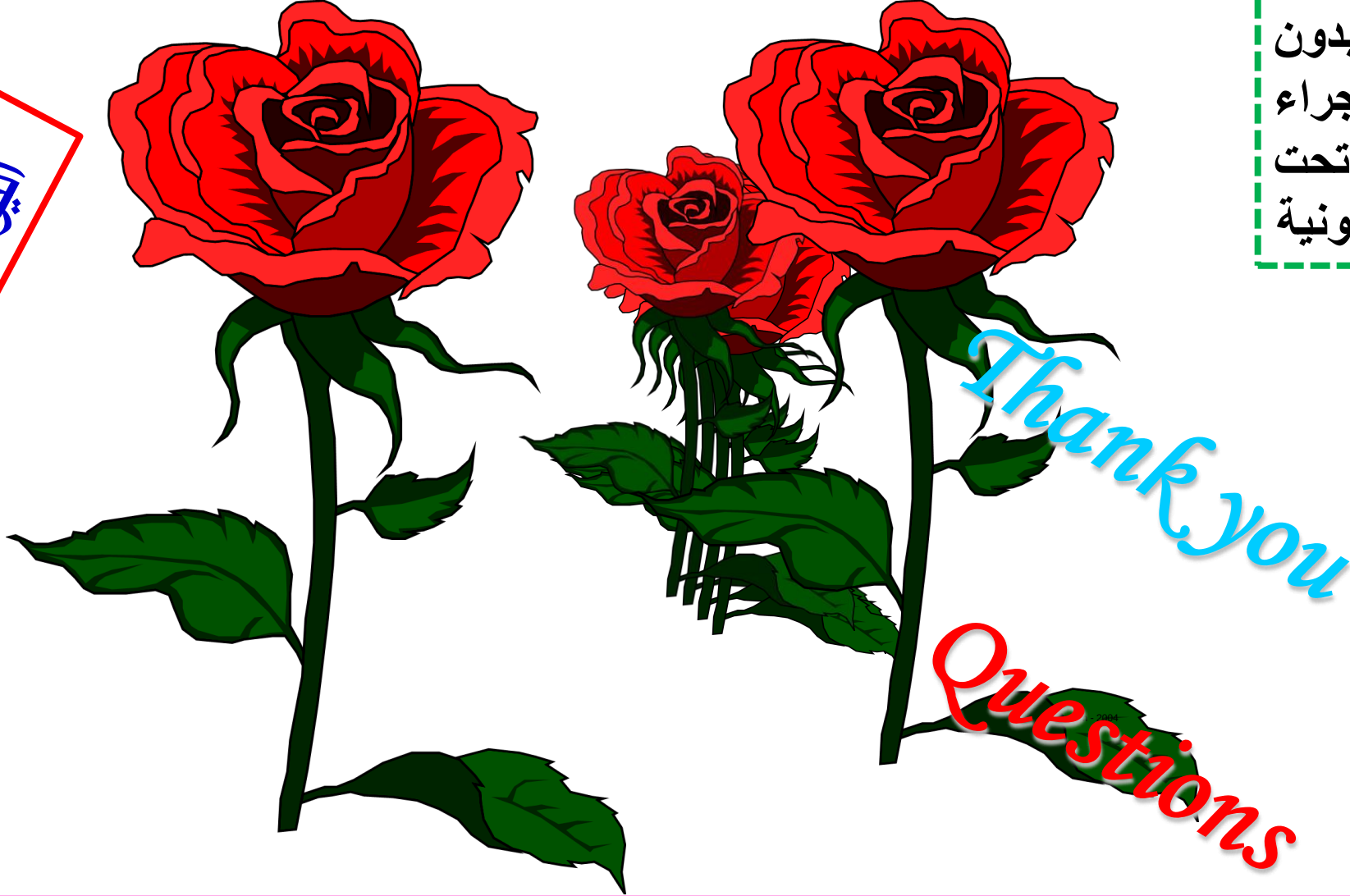
- **Female Pseudo hermaphroditism** (44+XX): fetus has ovaries and male external genital organs

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