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Testis

(A) Stroma:

1- **Tunica vaginalis**

It is formed of **mesothelial cells** (Double layer of peritoneum: visceral and parietal)

2- **Tunica albuginea**

Dense irregular collagenous CT (collagen type II, white)

3- **Tunica vasculosa**

It is formed of loose vascular C.T. lining tunica albuginea & speta from inside

4- **Septa**

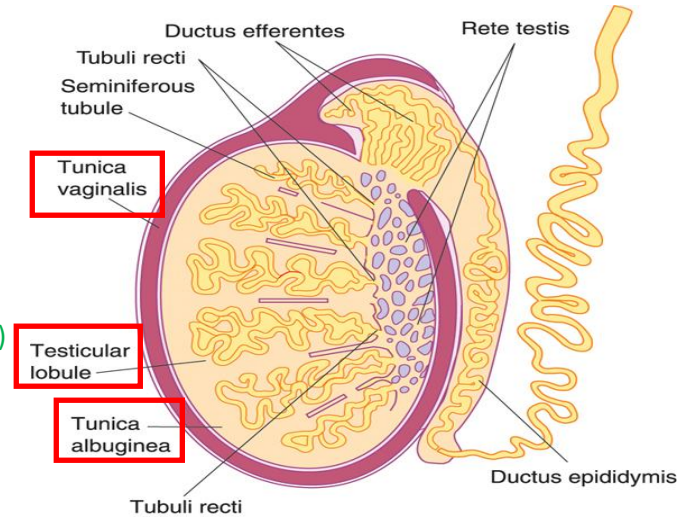
Dense irregular collagenous C.T. that divide the testis into about 250 intercommunicating compartments (testicular lobules = lobuli testis) (Formed of tunica albuginea and surrounded by tunica vasculosa)

5- **Interstitial tissue**

Loose vascular C.T. in between the seminiferous tubules.

Contents:

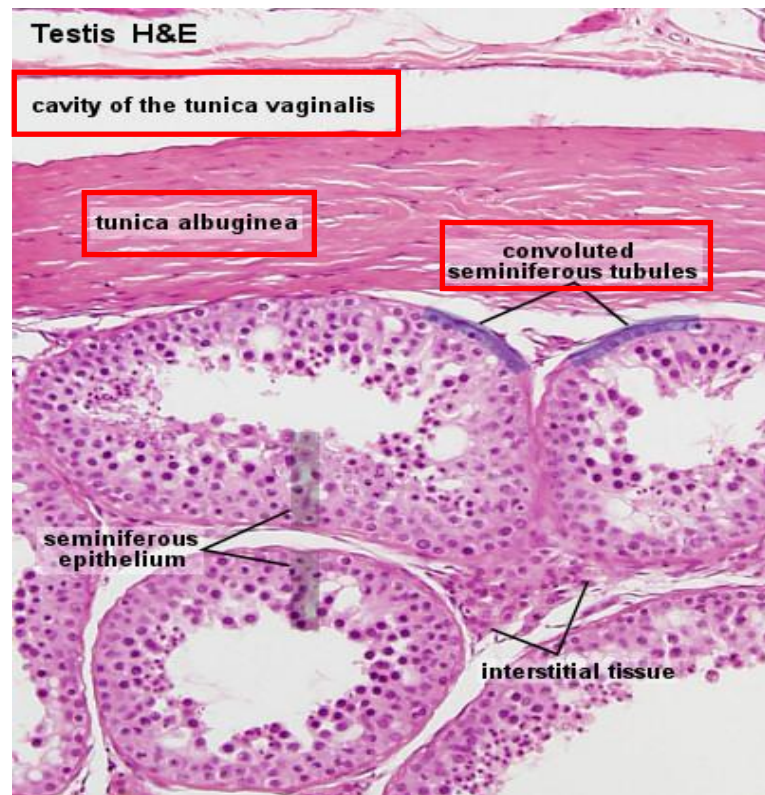
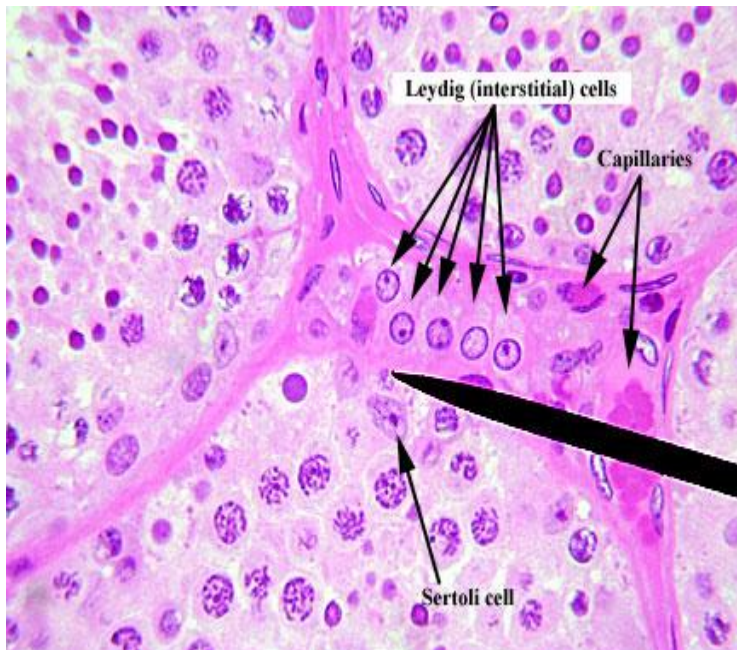
- 1- Loose vascular C.T.
- 2- Interstitial cells of Leydig.



(B) Parenchyma:

1- **Exocrine part: The seminiferous tubules** which produce spermatozoa.

2- **Endocrine part: interstitial cells of Leydig** which produce testosterone.



The seminiferous tubules

- Each tubule is surrounded by a basement membrane.
- Each tubule is lined with a **stratified epithelium called seminiferous epithelium** which is formed of 2 types of cells:

- 1- **Sertoli cells**
- 2- **Spermatogenic cells**

Interstitial cells of Leydig

- **Are rounded or polygonal cells with central rounded nucleus**
- Cytoplasm: **acidophilic** (secrete steroid) & **vacuolated** (pale, full of lipids)

Function: **Secrete testosterone**

1- Sertoli Cells

- **Are columnar or pyramidal cells**
- **Nucleus: Basal, vesicular irregular with prominent nucleolus**
- Functions:
 - 1- **Support & Nutrition** of spermatogenic cells.
 - 2- **Phagocytosis** of cytoplasmic remnants of spermatogenesis.
 - 3- **Secretion**:
 - ***Testicular fluid**
nutritive medium for transport of immotile spermatozoa.
 - ***Androgen Binding Protein (ABP)**
combines with testosterone and concentrate it inside the seminiferous tubules
 - ***Inhibin hormone**
inhibits FSH thus controlling rate of spermatogenesis.
 - 4- **Formation of blood-testis barrier**
 - It is formed by the **tight junctions** between the basal parts of the lateral borders of adjacent Sertoli cells.
 - It divides the seminiferous tubule into 2 compartments:
 - 1- **Basal compartment: contains spermatogonia.**
 - 2- **Adluminal compartment: contains the other spermatogenic cells.**
 - Function:
 - 1- It **protects the developing spermatogenic cells** from drugs and toxic materials.
 - 2- It **prevents autoimmune infertility.**

(The barrier separates the tissue fluid outside the seminiferous tubule from the spermatogenic cells inside the seminiferous tubule.

Isolation: and protection of the sensitive developing spermatogenic cells from any harmful substance in the blood stream.

Prevention of autoimmune reaction: prevents the passage of any autoantibodies against the developing gametes into the seminiferous tubule.

It isolates the adluminal compartment from connective tissue influences, thereby protecting the developing gametes from the immune system. Because spermatogenesis begins after puberty, the newly differentiating germ cells would be considered "foreign cells" by the immune system.)

2- Spermatogenic cells

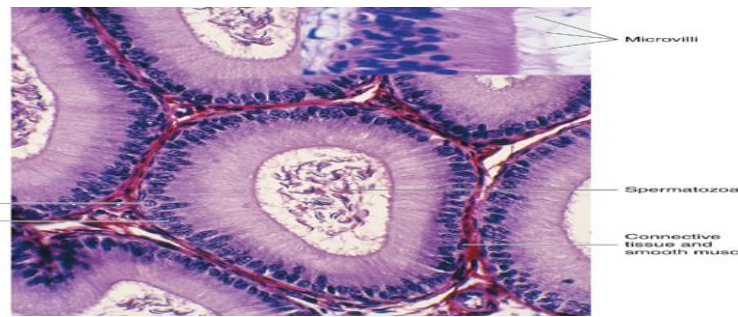
- **A series of cells lining the seminiferous tubules extending from the BM to the lumen.**
- Include:
 1. **Spermatogonia.**
 2. **1ry spermatocytes.**
 3. **2ry spermatocytes.**
 4. **Spermatids.**
 5. **Spermatozoa.**

EPIDIDYMIS (DUCTUS EPIDIDYMIS)

Structure:

- 1- Epithelium: **Pseudostratified columnar epithelium with stereocilia.**
- 2- Basal lamina.
- 3- Loose C.T.
- 4- Layer of circularly-arranged smooth muscle cells.

Basal cell
Columnar cell



Functions:

- a. **Storage & maturation** of spermatozoa.
- b. **Propelling** spermatozoa to the vas deferens.

- A single tubule; 4-6 m in length.
- Highly convoluted to form a compact organ 7.5 cm long.
- Divided into head, body & tail.
- The tail gives rise to the vas deferens.

DUCTUS DEFERENS (VAS DEFERENS)

It is a muscular narrow tube with irregular lumen.

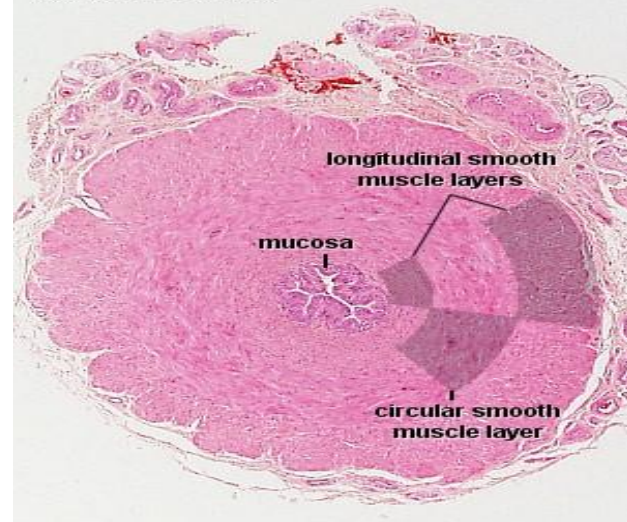
Structure:

- a. **Mucosa:** **Pseudostratified columnar epithelium with stereocilia** (immotile cilia) on a corium of loose C.T.
- b. **Musculosa** (thick; 3 layers): **Inner and outer longitudinal muscle layer and middle circular**
- c. **Adventitia:** loose C.T.

Function: Propelling of spermatozoa by strong peristalsis.

Starting at the tail of the epididymis, enters the abdomen through the inguinal canal to join the duct of the seminal vesicle to form the ejaculatory duct. Length is about 30 cm

Vas deferens H&E



SEMINAL VESICLES

(1) Mucosa:

- Is highly folded.
- Epithelium: **Pseudostratified columnar epithelium**
- Lamina propria of C.T.

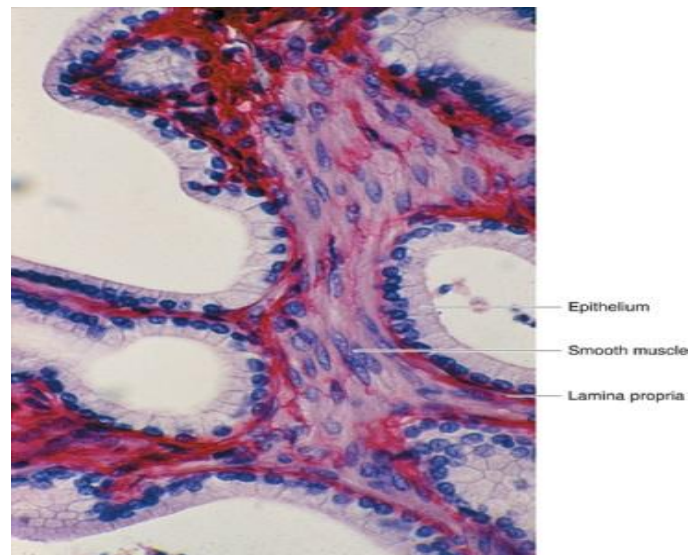
(2) Musculosa:

- Inner circular layer.
- Outer longitudinal layer.

(3) Adventitia: C.T.

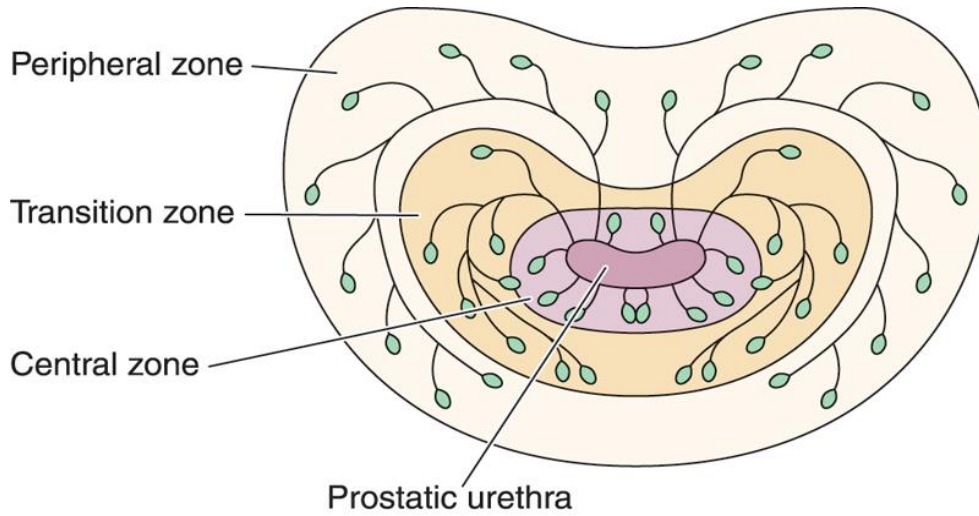
Function: Secretion of most of **seminal fluid**, rich in **fructose & vit. C**, which are the main nutrients for spermatozoa.

They are two highly convoluted tubes.

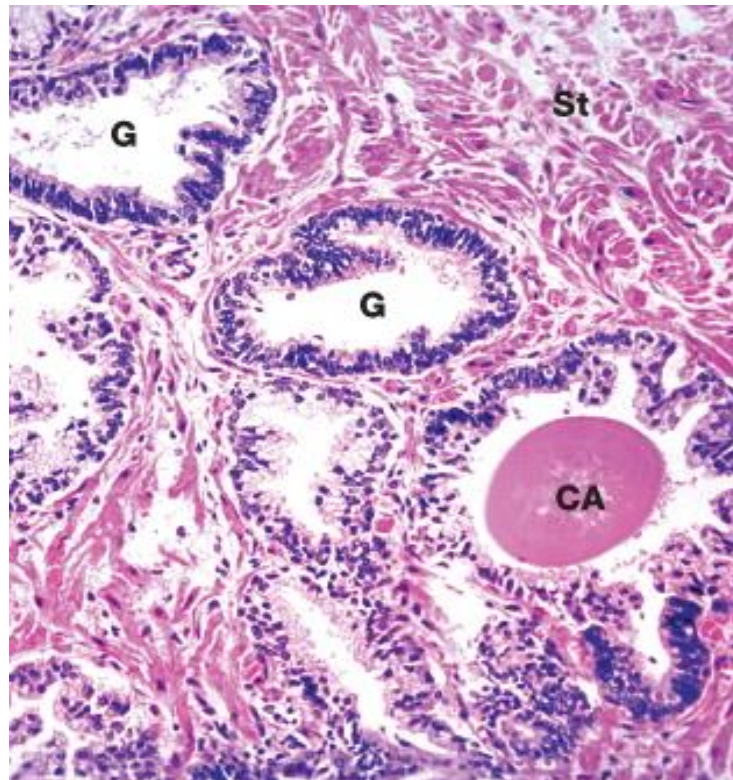


PROSTATE

- **Stroma:** fibromuscular capsule & trabeculae.
- **Parenchyma:** 30-50 glands in 3 concentric groups around the prostatic urethra:
 - **Mucosal group:** small.
 - **Submucosal group:** medium-sized.
 - **Main group:** Large, 70% of all glands.



- **Acini and ducts are lined with simple Columnar, or Pseudo Stratified Columnar Epithelium according to activity of the glands.**
- **Prostatic concretions (corpora amylacea):**
 - Round or oval masses of **glycoprotein** in the lumen of some glands
 - Increase with advancement of age & become calcified.
- **Function:** participates in the secretion of the **seminal fluid**. Its secretion is rich in **acid phosphatase & proteolytic enzymes**.



Questions

1-Which one of these cells is found in the interstitium of the testis:

- A- spermatids
- B- leydig cells
- C- sertoli cells
- D- spermatogonia

2-Which one of the following can be found in the Vas deferens:

- A- Thick musculosa.
- B- Psuedostratified columnar epithelium.
- C- Fibromascular capsule.

ANSWERS

1-B, 2-A