



HISTOLOGY

Reproductive Block – 432 Histology Team

Lecture 1: Male Reproductive System

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Color Guide:

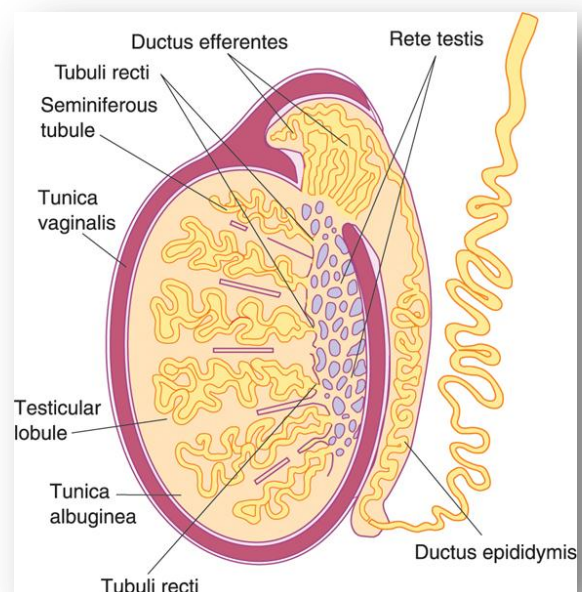
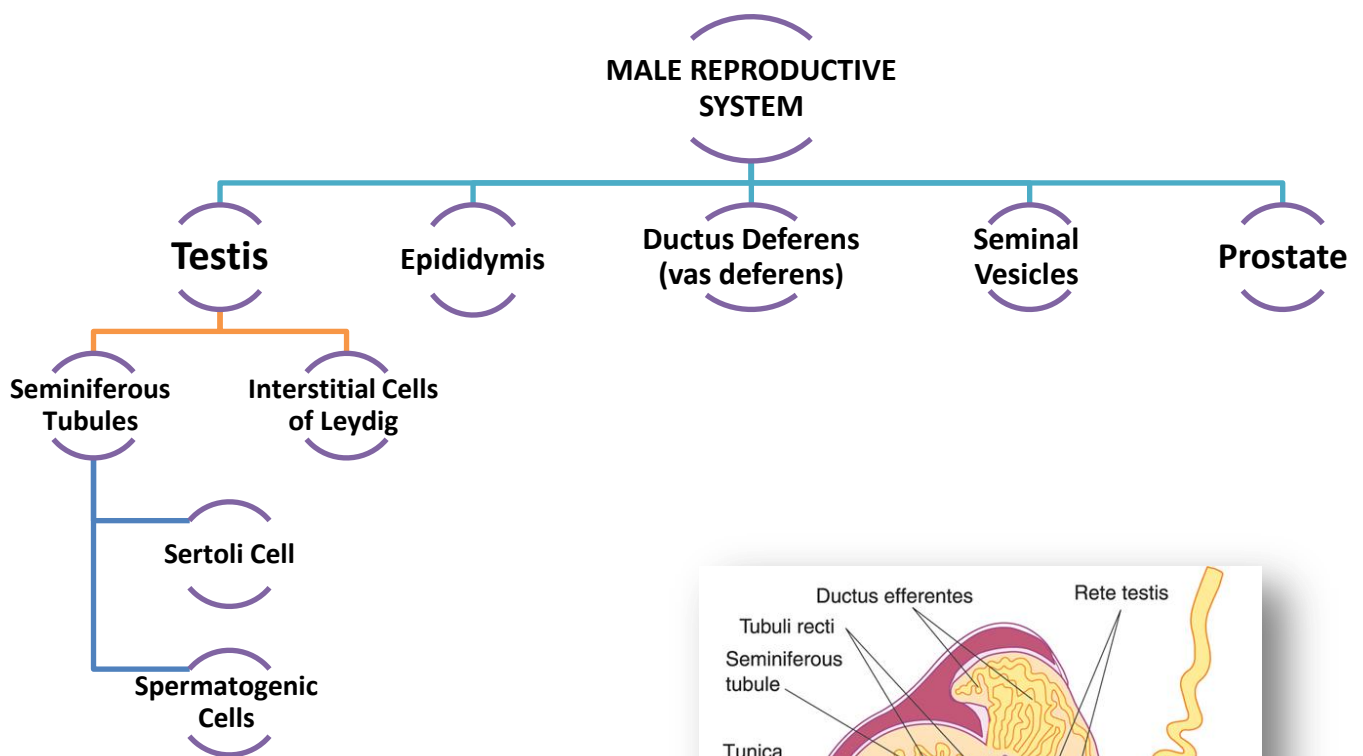
- **Black:** Slides.
- **Red:** Important.
- **Green:** Doctor's notes (Female).
- **Blue:** Doctor's notes (Male).
- **Orange:** Explanation.

Objectives

At the end of this lecture, you should describe the microscopic structure and the function of:

1. Testis and epididymis.
2. Vas deferens.
3. Seminal vesicles.
4. Prostate.

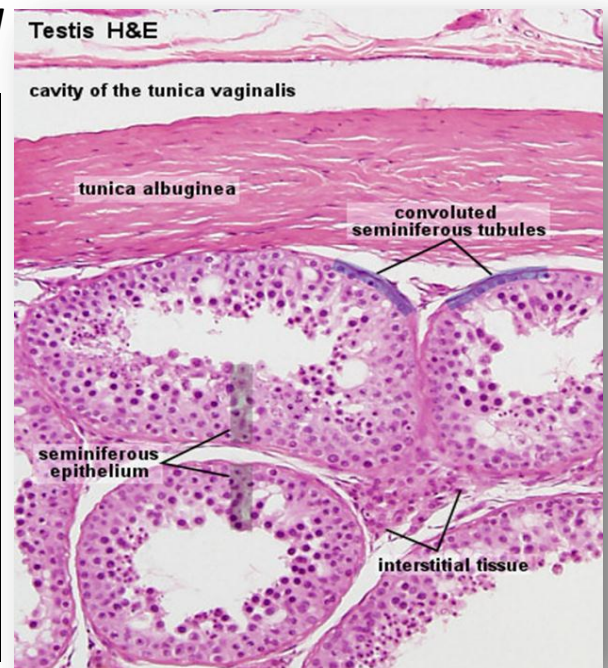
Mind Map



1- Testis

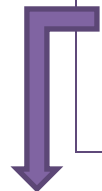
A) Stroma

Layers from Outside to Inside	Type of Tissue
Tunica Vaginalis	It is formed of mesothelial cells .
Tunica Albuginea	Dense irregular collagenous C.T.
Tunica Vasculosa	<ul style="list-style-type: none"> It is formed of loose vascular C.T. It lines tunica albuginea & speta from inside.
Septa of the Testis	<ul style="list-style-type: none"> Dense irregular collagenous C.T. Divide the testis into about 250 intercommunicating compartments. (Testicular lobules = lobuli testis).
Interstitial Tissue	Loose vascular C.T. in between the seminiferous tubules. Contents: <ol style="list-style-type: none"> Loose vascular C.T. Interstitial cells of Leydig.



B) Parenchyma

Exocrine part	Endocrine part
<p>Seminiferous Tubules</p> <p>Each tubule is lined with a <u>stratified epithelium</u> called seminiferous epithelium which is formed of 2 types of cells:</p> <ol style="list-style-type: none"> Spermatogenic cells. Sertoli cells. <ul style="list-style-type: none"> Each tubule is surrounded by a basement membrane. 	<p>Interstitial Cells of Leydig</p> <ul style="list-style-type: none"> Are rounded or polygonal cells with central rounded nucleus. Acidophilic & vacuolated cytoplasm. <p>Function → Secrete testosterone.</p>



Sertoli Cells	Spermatogenic Cells
<ul style="list-style-type: none"> Are columnar or pyramidal cells. Basal, vesicular and irregular nucleus with prominent nucleolus. <p>Function:</p> <ul style="list-style-type: none"> Support & nutrition of spermatogenic cells. Phagocytosis of cytoplasmic remnants of spermatogenesis. Secretion: <ul style="list-style-type: none"> Testicular fluid. Androgen Binding Protein (ABP). Inhibin hormone. Formation of blood-testis barrier. 	<p>A series of cells lining the seminiferous tubules extending from the BM to the lumen.</p> <p>Include:</p> <ol style="list-style-type: none"> Spermatogonia. 1ry spermatocytes. 2ry spermatocytes. Spermatids. Spermatozoa.



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- <u>Basal compartment</u> : contains spermatogonia.	2- <u>Adluminal compartment</u> : contains the other spermatogenic cells.
<p>Function:</p> <ul style="list-style-type: none"> It protects the developing spermatogenic cells from drugs and toxic materials. It prevents autoimmune infertility. 	

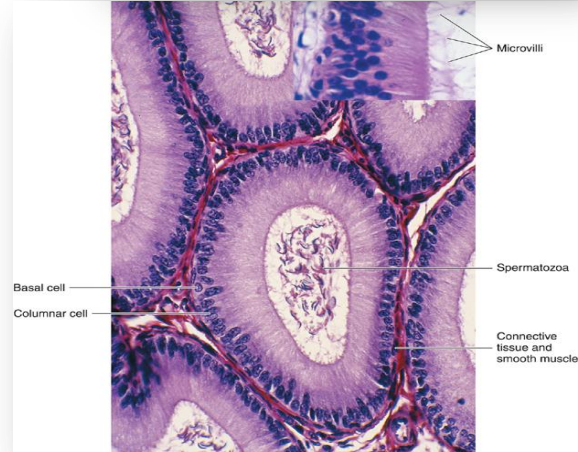
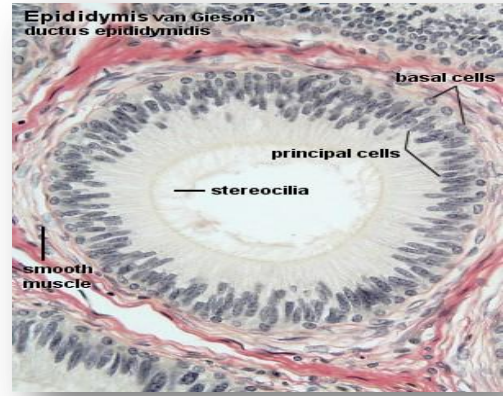
2- Epididymis (Ductus Epididymis)

Structure:

- (1) Epithelium:
Pseudo stratified columnar epithelium with stereocilia (immotile cilia).
- (2) Basal lamina.
- (3) Loose C.T.
- (4) Layer of circularly-arranged smooth muscle cells.

Functions:

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

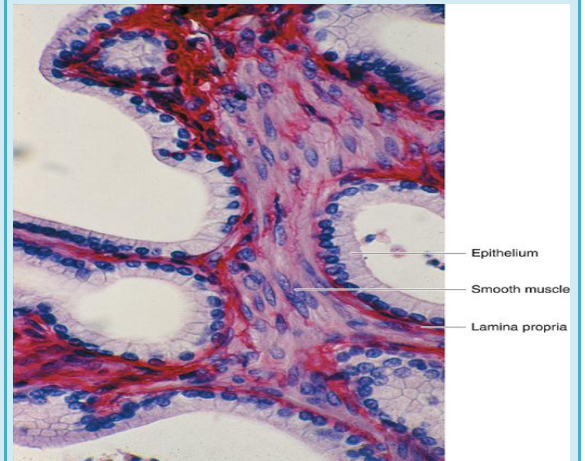
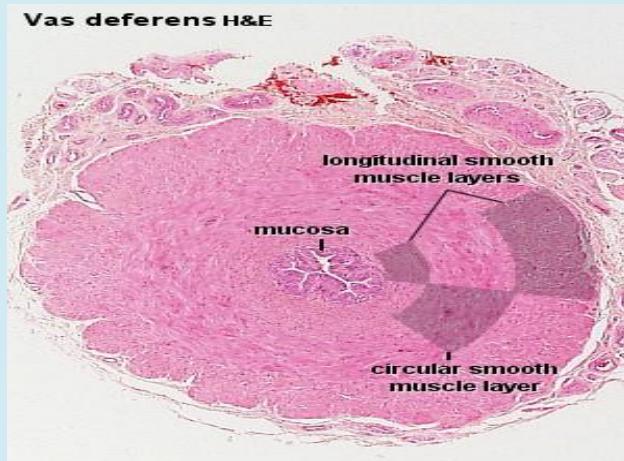


3- Vas Deferens

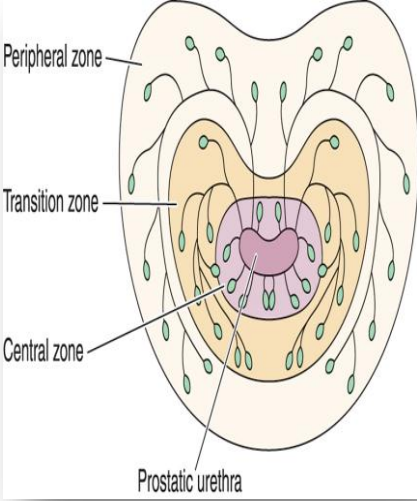
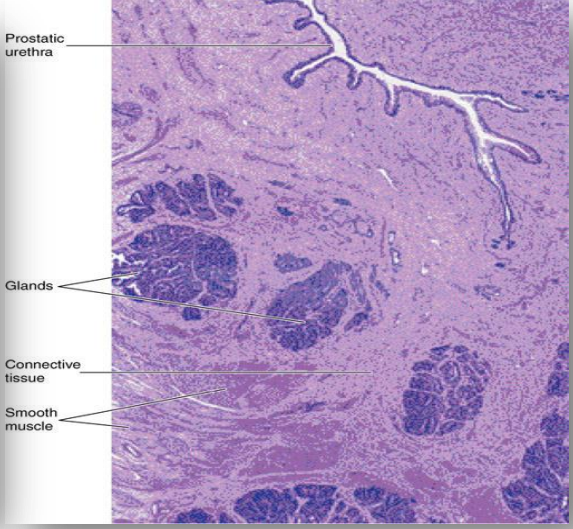
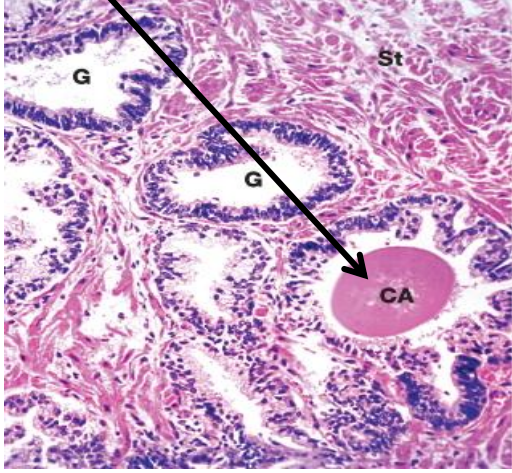
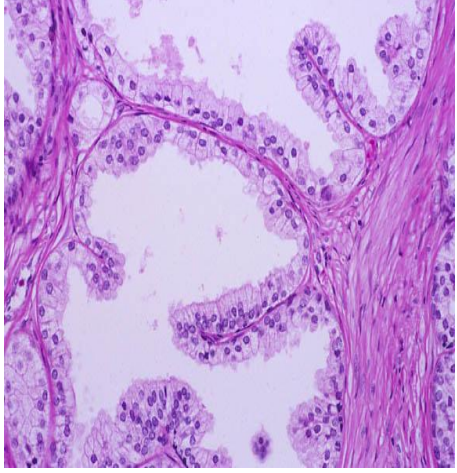
4- Seminal Vesicles

Layers	Vas (Ductus) Deferens: It is a muscular narrow tube with irregular lumen.	Seminal Vesicles
Mucosa	1- Pseudo stratified columnar epithelium with stereocilia (immotile cilia). 2- Corium of loose C.T.	It's highly folded: 1- Pseudo stratified columnar epithelium. 2- Lamina propria of C.T.
Musculosa	Thick and formed of 3 layers: 1- Inner longitudinal muscle layer. 2- Middle circular muscle layer. 3- Outer longitudinal muscle layer.	1- Inner circular muscle layer. 2- Outer longitudinal muscle layer.
Adventitia	Loose C.T.	C.T.
Function	Propelling of spermatozoa by strong peristalsis.	Secretion of most of seminal fluid, rich in fructose & vit. C. which are the main nutrients for spermatozoa.

L/M



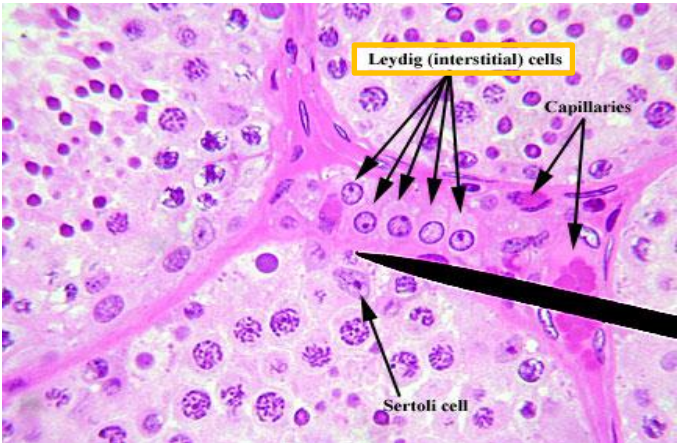
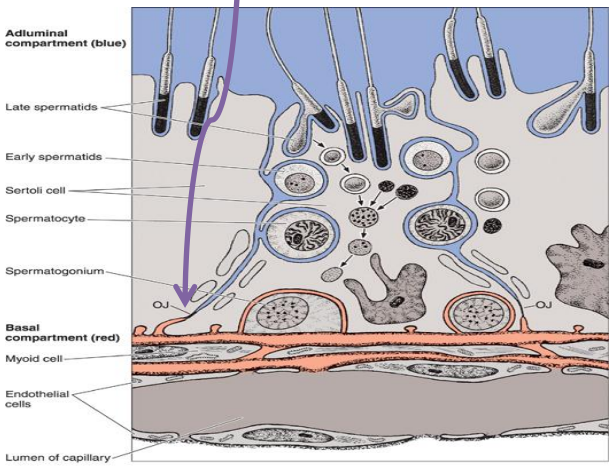
5- Prostate

Stroma	Parenchyma
<p>fibromuscular capsule & trabeculae.</p>	<p>30-50 glands in 3 concentric groups around the prostatic urethra:</p> <ol style="list-style-type: none"> Mucosal group: small. Submucosal group: medium-sized. Main group: Large, 70% of all glands.  
<p>---</p>	<ul style="list-style-type: none"> • Acini and ducts are lined with simple columnar or pseudo stratified columnar epithelium according to activity of the glands. • Prostatic concretions (corpora amylacea): <ol style="list-style-type: none"> a. Round or oval masses of glycoprotein in the lumen of some glands. b. <u>Increase</u> with advancement of age & become calcified.  
<p>---</p>	<p>Function: Participates in the secretion of the seminal fluid. Its secretion is rich in acid phosphatase & proteolytic enzymes.</p>

Summary

stroma			Parenchyma	
Tunica vaginalis	—	It is formed of mesothelial cells.	Exocrine part	Endocrine part
Tunica albuginea	Dense irregular collagenous C.T.	—	Seminiferous Tubules <ul style="list-style-type: none"> Lined with seminiferous epithelium. formed of 2 types of cells: <ol style="list-style-type: none"> Spermatogenic cells. Sertoli cells. 	Interstitial Cells of Leydig <ul style="list-style-type: none"> Rounded or polygonal cells. Central rounded nucleus. Acidophilic & vacuolated Cytoplasm. Function → Secrete testosterone
Tunica vasculosa	loose vascular C.T.	Lining tunica albuginea & speta from inside.		
Septa of the Testis	Dense irregular collagenous C.T.	Divide the testis (testicular lobules = lobuli testis)		
Interstitial Tissue in between the seminiferous tubules.	Loose vascular C.T.	Contents: 1- Loose vascular C.T. 2- Interstitial cells of Leydig.		

Sertoli Cell	Blood-Testis Barrier	Spermatogenic Cells
<ul style="list-style-type: none"> Columnar or pyramidal cells. Basal, vesicular and irregular nucleus. Prominent nucleolus. 	<ul style="list-style-type: none"> Formed by the tight junctions between the basal parts of adjacent Sertoli cells. It divides the seminiferous tubule into: <ol style="list-style-type: none"> Basal compartment: contains spermatogonia. Adluminal compartment: contains the other spermatogenic cells. 	Cells lining the seminiferous tubules. Include: <ul style="list-style-type: none"> Spermatogonia. 1ry spermatocytes. 2ry spermatocytes. Spermatids. Spermatozoa.
Functions → <ul style="list-style-type: none"> ✓ Support & Nutrition of spermatogenic cells. ✓ Phagocytosis remnants of spermatogenesis. ✓ Secretion: <ul style="list-style-type: none"> Testicular fluid. (ABP). Inhibin hormone. ✓ Formation of blood-testis barrier. 	Function → <ul style="list-style-type: none"> ✓ Protect the spermatogenic cells from drugs and toxic materials. ✓ Prevent autoimmune infertility. 	—



Summary (Cont.)

	Epididymis (ductus epididymis)	Ductus deferens (vas deferens)	Seminal vesicles	Prostate
Structure	<ul style="list-style-type: none"> • Pseudo stratified columnar epithelium with stereocilia. • Basal lamina. • Loose C.T. • Layer of circulatory-arranged smooth muscle cells. 	Mucosa: <ul style="list-style-type: none"> • Pseudo stratified columnar epithelium with stereocilia (immotile cilia). • Loose C.T. 	Mucosa: <ul style="list-style-type: none"> • pseudo stratified columnar epithelium. • Lamina propria of C.T. 	Stroma
		Musculosa: <ul style="list-style-type: none"> • Inner longitudinal. • Middle circular. • Outer longitudinal. 	Musculosa: <ul style="list-style-type: none"> • Inner circular. • Outer longitudinal. 	Parenchyma
		Adventitia: loose C.T.	Adventitia : C.T.	30-50 glands in 3 concentric groups around the prostatic urethra : <ol style="list-style-type: none"> 1. Mucosal group. 2. Submucosal group. 3. Main group: 70% of all glands. <ul style="list-style-type: none"> • Acini and ducts are lined with simple columner or psoudo stratified columner epithelium. • Corpora amylacea: <ol style="list-style-type: none"> 1. Glycoprotein masses in the lumen of some glands. 2. Increase with advancement of age & become calcified.
Functions	<ul style="list-style-type: none"> ✓ Storage & maturation of spermatozoa. ✓ Propelling spermatozoa to the vas deferens. 	<p style="text-align: center;">Propelling of spermatozoa by strong peristalsis</p>	<p>Secretion of most of seminal fluid, rich in fructose & vit. C. Which are the main nutrients for spermatozoa.</p>	<ul style="list-style-type: none"> ✓ Participates in the secretion of the seminal fluid. ✓ Its secretion is rich in acid phosphatase & proteolytic enzymes.

Questions

Q1: Which part of stroma of the testis is formed by dense irregular collagenous C.T.

- A. Tunica vaginalis.
- B. Tunica albugenia.
- C. Septa of the testis.
- D. (B) and (C).

Q2: Which one of the following cells is rounded and secretes testosterone?

- A. Spermatogonium.
- B. Sertoli cells.
- C. Leydig cells.
- D. Sperms.

Q3: The type of epithelium that lines the epididymis:

- A. Pseudostratified columnar epithelium with stereocilia.
- B. Stratified columnar epithelium
- C. Mesothelial cells.
- D. Simple columnar epithelium.

Q4: A part of male genital duct that has a strong peristaltic movement due to thick muscular layer:

- A. Seminiferous tubules.
- B. Epididymis.
- C. Ductus deferens.
- D. (B) and (C).

Q5: Which one of the followings is found in prostatic secretions?

- A. Testosterone.
- B. Fructose.
- C. Proteolytic enzymes.

Answers

1	2	3	4	5
D	C	A	C	C



**If you have any questions or suggestions please do not
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Best of luck!

