

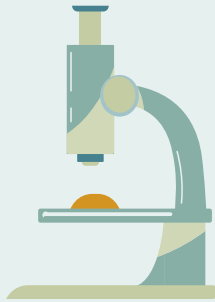


MED439  
KING SAUD UNIVERSITY

Revised & Approved



جامعة  
الملك سعود  
King Saud University



Histology Team  
439

# Male reproductive system

Color index:

Slides

Important

Doctors notes

Extra

Editing file

## ► Objectives:

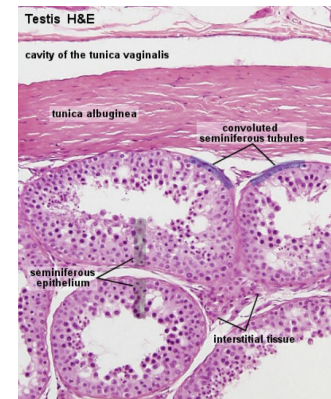
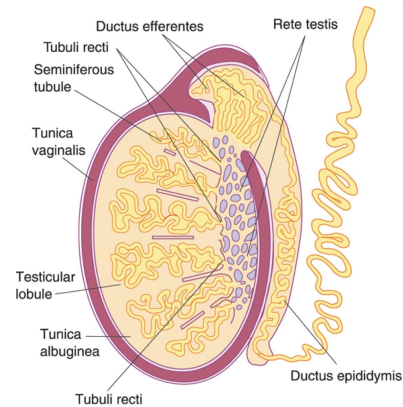
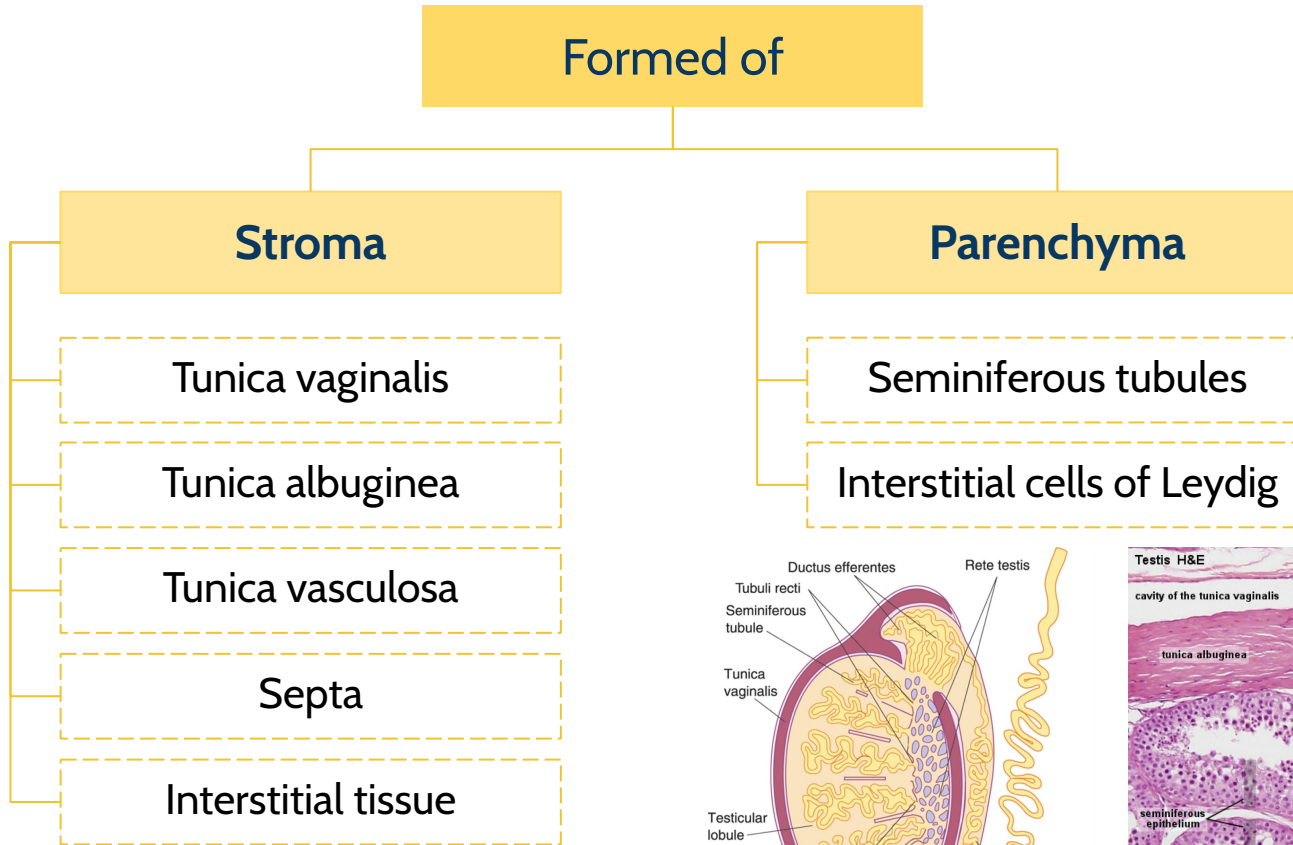
At the end of this lecture, the student should be able to describe the microscopic structure of :

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

[Click here](#) for a summary of the first & second lectures

Special thanks to Sarah Alobaid ♥

# ► Testis



# ► Testis

## Stroma

Tunica vaginalis	Tunica albuginea	Tunica vasculosa	Septa of the testis	Interstitial tissue
<ul style="list-style-type: none"> <li>It's formed of <b>mesothelial cells</b>.</li> </ul>	<ul style="list-style-type: none"> <li>Dense irregular collagenous C.T.</li> </ul>	<ul style="list-style-type: none"> <li>It's formed of <b>loose vascular C.T.</b> lining tunica albuginea &amp; septa from inside.</li> </ul>	<ul style="list-style-type: none"> <li>Dense irregular collagenous C.T.</li> <li>Divide the testis into about 250 intercommunicating compartments (testicular lobules = lobuli testis).</li> </ul>	<ul style="list-style-type: none"> <li>loose vascular C.T. in between the seminiferous tubules. Contents:               <ol style="list-style-type: none"> <li>Loose vascular C.T.</li> <li>Interstitial cells of Leydig</li> </ol> </li> </ul>

## Parenchyma

### Exocrine part

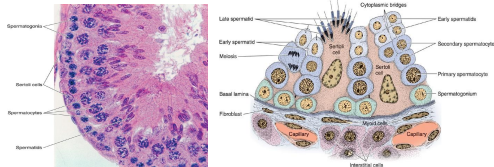
The seminiferous tubules which produce spermatozoa

### Endocrine part

Interstitial cells of Leydig which produce testosterone

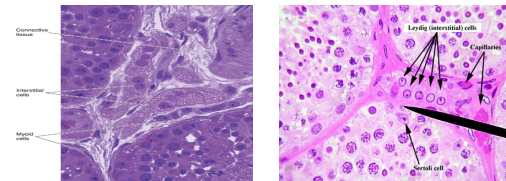
### Seminiferous Tubules

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



### Interstitial Cells of Leydig are:

- Rounded or polygonal cells with central rounded nucleus.
- Cytoplasm: acidophilic & vacuolated.
- Function: Secrete testosterone.

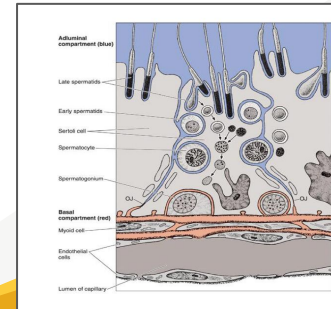


# ▶ Seminiferous Tubules

Sertoli Cell	Spermatogenic Cells
<ul style="list-style-type: none"><li>• Are <b>columnar or pyramidal cells</b>.</li><li>• <b>Nucleus</b> : Basal, vesicular, irregular with prominent nucleolus.</li><li>• <b>Functions:</b><ol style="list-style-type: none"><li>1- Support &amp; Nutrition of spermatogenic cells.</li><li>2- Phagocytosis of cytoplasmic remnants of spermatogenesis.</li><li>3- Secretion:<ul style="list-style-type: none"><li>- Testicular fluid <b>nutritive medium</b> for transport of <b>immotile spermatozoa</b></li><li>- Androgen Binding Protein (ABP)</li><li>- Inhibin hormone</li></ul></li><li>4- Formation of blood-testis barrier.</li></ol></li></ul>	<ul style="list-style-type: none"><li>• A series of cells lining the seminiferous tubules extending from the BM to the lumen.</li><li>• <b>Include:</b><ul style="list-style-type: none"><li>-Spermatogonia.</li><li>- 1ry spermatocytes.</li><li>- 2ry spermatocytes.</li><li>- Spermatids.</li><li>- Spermatozoa.</li></ul></li></ul>

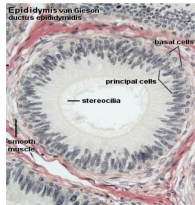
## ▶ Blood-Testis Barrier

- 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:
  - **Basal compartment:** contains spermatogonia.
  - **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.



## Epididymis (Ductus Epididymis)

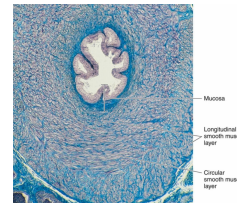
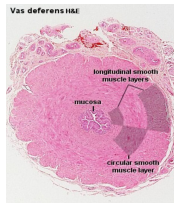
- **Structure**
  - 1- **Epithelium:** pseudostratified columnar epithelium with stereocilia  
stereocilia is elongated microvilli and it doesn't has any microtubules
  - 2- Basal lamina.
  - 3- Loose C.T.
  - 4- Layer of circulary-arranged smooth muscle cells.
- **Function**
  - 1- Storage & maturation of spermatozoa.
  - 2- Propelling spermatozoa to the vas deferens.



## Ductus Deferens (Vas Deferens)

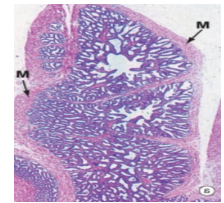
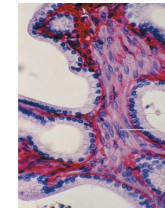
It is a muscular narrow tube with irregular lumen.

- **Structure:**
  - 1- **Mucosa:** pseudostratified columnar epithelium with stereocilia (immotile cilia) on a corium of loose C.T.
  - 2- **Musculosa** (thick; 3 layers):
    - inner longitudinal layer
    - Middle circular layer
    - Outer longitudinal layer
  - 3- **Adventitia:** loose C.T.
- **Function**
  - Propelling of spermatozoa by strong peristalsis.



## Seminal Vesicles

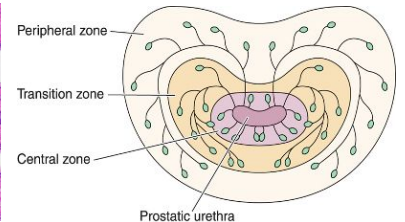
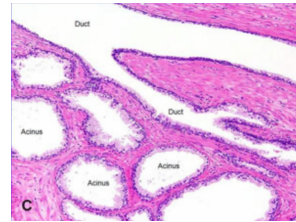
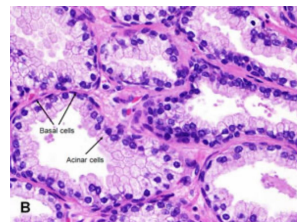
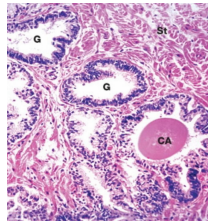
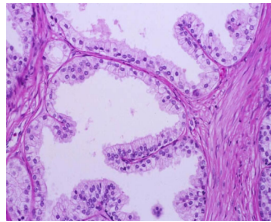
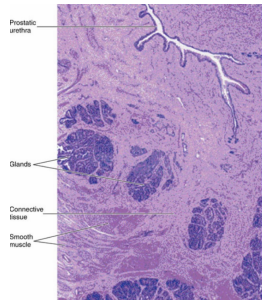
- **Structure**
  - 1- **Mucosa:** is highly folded.
    - Epithelium: pseudostratified columnar epithelium (no stereocilia)
    - Lamina propria of C.T.
  - 2- **Musculosa:** Inner circular layer Outer longitudinal layer
  - 3- **Adventitia:** C.T.
- **Function**
  - Secretion of most of seminal fluid, rich in fructose & vit. C. which are the main nutrients for spermatozoa.



# ► Prostate

Stroma	Parenchyma	Acini and ducts	Prostatic concretions (corpora amylacea)
fibromuscular capsule & trabecula	30-50 glands in 3 concentric groups around the prostatic urethra: <ul style="list-style-type: none"> <li>• <u>Mucosal group</u>: small.</li> <li>• <u>Submucosal group</u>: medium-sized.</li> <li>• <u>Main group</u>: Large, 70% of all glands.</li> </ul>	are lined with simple columnar or pseudostratified columnar epithelium according to activity of the glands.	<ul style="list-style-type: none"> <li>• Round or oval masses of glycoprotein in the lumen of some glands.</li> <li>• Increase with advancement of age &amp; become calcified.</li> </ul>

- Function: participates in the secretion of the seminal fluid. Its secretion is rich in acid phosphatase & proteolytic enzymes.



## Doctor's notes (female)

- The testes are intra-abdominal organs during development. then they descend outside the body, because spermatogenesis requires a lower temperature than normal body temperature.
- The septa divides the testis into 250 compartments and each has 4 seminiferous tubules, so each testis contain about one thousand tubules.
- Tunica vaginalis is an extension of periteneum.
- Tunica vasculosa is rich in blood vessels
- Seminiferous tubules are modified epithelial cells. Each tubule is lined with stratified epithelium (it doesn't mean it's stratified squamous, it actually means that it's lined with many layers)
- ABP: combines with testosterone and concentrate it inside the seminiferous tubules.
- Inhibin: inhibit FSH & LH
- In the prostate: the lumen of the glands is filled with thick prostatic secretions, and the accumulations increase with age until it get calcified and fail to pass through the ducts, so the fluid is stored in the lumen.
- Proteolytic enzymes facilitate the penetration of head of the sperm.
- The sperm is immotile when produced from the seminiferous tubules. When the sperm reach the fallopian tube, it undergo capacitation (the capacity to penetrate the ovum) which attained by the fluid in the fallopian tube.

## Doctor's notes (male)

- Endocrine part of the testis parenchyma** : has: Lipids droplets , acidophilic Cytoplasm , abundant SER + mitochondria with with tubular cristae.
- Epididymis** : Highly convoluted to form a compact organ 7.5 cm long. Divided into head, body & tail. Its tail gives rise to the vas deferens.
- Vas deferens** : 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
- Androgen-binding protein (ABP)**: combines with testosterone and concentrate it inside the seminiferous tubules.



# Legends leaderboard

It has been a great journey, beginning in the foundation, passing through MSK, enjoying with respiratory, living with Cardiorenal almost forever. And then we started new year with COVID-19 & the boooi CNS, crushing GIT, laughing in endocrine, and here we are fighting in reproductive.


And since the members are the fundamental of this team, they should share us these moments As a wise man once said "with these members, you can participate in UCL not only medical school blocks"

Nawaf AlShahrani	Abdullah Alburikan	Nourah Alklaib
<p>الحمد لله على التمام ، سنتين مرت بجلوها ومرها ، صراحه من اجمل الاشياء خلال هالسننتين العمل في التيمات ، تكتسب خبره ومهاره ومعرفه والحمد لله تيم الهستو جبار من ليدرز من ممبرز ، التعاون والروح الطبيه كانت موجوده دائماً ، ختاماً، الله يكتب لنا الخير ويسهل طريقنا قادم الأيام ويحقق امانينا يارب 🙏 متأكد ان يبجي يوم ويشوف رسالتي هذي ان شاء الله مستقبلا وانا كلي فخر.....</p> <p>فستنتجلي بل لا أقول لعلها ان الامور اذا التوت وتعقدت ونزل القضاء من الكريم فحلها ويحلها من كان يملك عقدها مساء 5:19 13/4/2021/9/1/1442</p>	<p>أولاً أوجه شكري لهذا التيم الرائع، وأقول لجميع أصحابي ومن يقرأ هذه الرسالة مستقبلاً أن رحلة الطب مختلفة وجميلة، لكنها ليست سهلة وبسيطة، وقد تتعب وتُضغظ في هذه الرحلة الطويلة، فنصحتي لك لا تستسلم أبداً وتابع في نجاحك وكفاحك في هذه الرحلة. <a href="#">Click Here</a></p> <p>14 April 2021 5:50 AM</p>	<p>عالمياً ما عندي حل وسطاو يعبر باخذ 5 مبرعات بتدبر من بعض شبية</p> <p>So I'll just leave this here..</p> <p>هذا الطبيب الذي أصبح ، الذي مرّ عالمك وأنتهك ، إنه بينيك بعد أن تحطمتك ، تخرجتك صلياً بعد أن بُرقتك ، بعدما ظننت أن لباله الطوال ستدفعك ، وأنتك ستخرج من بين كتبه عالمي الوقاض لا دليل لك ، وبعدها لعنت الساعة التي بهذا الطريق ورطنتك ، وأيقنت أن طريقة عمر وليس لك ، تاتيك ساعة أخرى تُشّتك ، تُخبرك بأن الطريق مهما طالت فإن نهايته ستدركك ، ستجيد هذا الطبيب في يوم إيمانك وتغشك ، سيعيد كل ما سلبه منك ليُكرمك ، وحين تُسال بومئذ عن الضباب فيما قد فنى ، فإن معلفاً أيضاً كان يعلمك سيسبقك لك .</p> <p>Tue 13 April 2021, 10:11 PM</p>
<p>اهلاً، اولاً، شكراً لتيم ال(Histology) على هذي الفكرة الجميلة. ثانياً، بعد مشور كان مرهق بعض الشيء انا اليوم سعيد!! ودي اقول كم شغلة بسيطة لكم... -استمتعوا بالرحلة حتى وان كانت الوجهة بعيدة. -تذكروا ان كل مر سيمر. - (وأصبر فإن الله لا يُضيق أجر المُخسرين) - "وعائق المجد من أوفى ومن صبر" - "المجد للساعين، لا للخاملين الفئع" -اختار البيئته المناسبة لك دايماً، لأنك راح تبعد فيها. -احسنوا اختيار الأصدقاء فمعادهم تظهر وقت الشدة.</p>	<p>مهاعشرت فلا تقف مادام في القلب الشغف حق وان ذقت المرارة في مسيرك للهدف ؛</p> <p>واذكر جهودك حينما جاوزت أول منعطف أرأيت أنك تستطيع ؟ أم أن من قطع المصاعب كان شخصاً مختلف.</p> <p>12 April 2021, 10:11 PM</p>	<p>نطوي لكم صفحة خضنا فيها جميع المعارك.. نعم معارك! فدراسة الاربعة شهر وتحول اجازتنا الطويلة الى اربع ايام تعتبر اول معاركنا ونختتمها باربعة اسابيع حافلة باختبارات عدة وتسعون محاضرة ههه. بدننا معكم في الـCNS ولم نتوقع أن تمضي الايام بسرعة حتى يأتي اليوم الذي نقول فيه لكم شكرا جزيلاً على دعمكم المستمر خلالها وشكرا للقادة مريم ومحمد ، نلتاكم على خير</p> <p>12 April 2021, 10:11 PM</p>

## Fayez AlTabbaa

اللهم لك الحمد انتهينا من المقرر والحمد لله كان الشغل ميسر وممتع وسهل بفضل الليدرز من بعد الله، ألف شكر لهم ولأعضاء التيم على الشغل الجبار

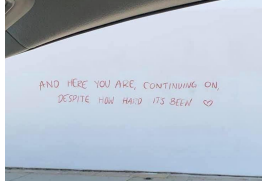
## Joud Alarifi

After 2 long years, we finally finished Histology 🦋 I would like to thank our leaders Mohamed, Mariam, Albara, Fatimah, Samar & each member of this team 💙💙💙 [click here!!](#) 

## Maha AlQahtani

Many thanks to the team. It was pleasure working with all of you . World is small and will be looking forward to work with the team again (:  
!Best of luck to all

## Shahad Alrasheed



## Sumo Abdulrahman

( وَهُوَ مَعَكُمْ أَيَّنَمَا كُنْتُمْ )



gg

<https://www.youtube.com/watch?v=tYzMYcUty6s>

## Mohammed Benhiji

لقد استمتعت بالعمل مع الفريق في هذه العامين وأنا بالفعل سعيد وفخور لتمكني من العمل وإفادة الدفعة نرجوا من الله التوفيق في الدنيا والآخرة.



## Mariam Alruhaimi

شكرًا لكل أحد ساهم في إتمام هذا العمل كله بفضل الله وجهودكم والله يكتب أجر الجميع

## Mohamed Albabtain

"Best team I've ever had"



3:49 PM 14/4/2021

TO THE INFINITY AND BEYOND...

# MCQs

Q1) Which of the following formed of mesothelium?

- A- Tunica vaginalis
- B- Tunica Albuginea
- C- Tunica vasculosa
- D- Septa of the testis

Q2) Which of the following is the endocrine part of the testis?

- A- Interstitial Cells of Leydig
- B- Seminiferous Tubules
- C- serotil cells
- D- Septa of the testis

Q3) Which of the following is true about serotil cell?

- A- It's squamous
- B- has central nucleus
- C- found in prostate
- D- It's columnar

Q4) Which of the following lining the Epididymis?

- A- stratified squamous epithelium
- B- pseudostratified columnar epithelium
- C- pseudostratified squamous epithelium
- D- Simple columnar epithelium

Q5) Which member was the best in this team?

- A- Nawaf AlShahrani
- B- Abdullah Alburikan
- C- Nourah Alklaib
- D- Nawaf Alghamdi
- E- Afnan Almohsen
- F- Rania almutiri
- G- Fayez AlTabbaa
- H- Joud Alarifi
- I- Maha AlQahtani
- J- Shahad Alrasheed
- K- Sumo alzeer
- L- yazeed alomar
- M- Mohammed Benhiji
- N- ALL OF THEM

### Team leaders

Mariam Alruhaimi

Mohamed Albabtain

### Team members

Abdullah Alburikan

Fayez AlTabbaa

✓ Mohammed Alhejji

✍ Nawaf Alshahrani

✓ Nawaf Alghamdi

Yazeed Alomar

Afnan AlMohsen

Joud Alarifi

✓ Nourah Alklaib

✓ Shahad Alrasheed

🔍 Sumo Abdulrahman

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