

# **Male Reproductive System**

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**Professor**

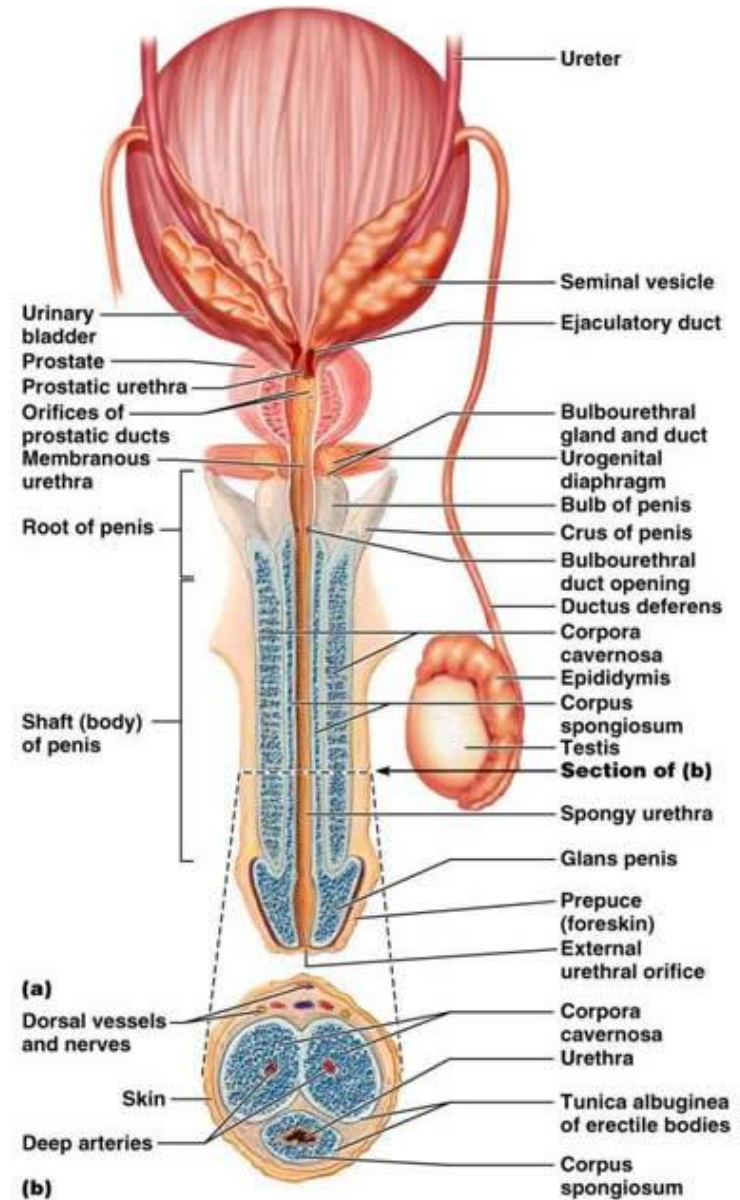
**Department of Anatomy**

**K G's Medical University U P**

**Lucknow**

# Male Reproductive System

- Testis
- Epididymis
- Vas deferens
- Seminal Vesicle
- Prostate
- Penis



# Testis

- **Covering of testis**

**1. Tunica vaginalis**

**2. Tunica albuginea**

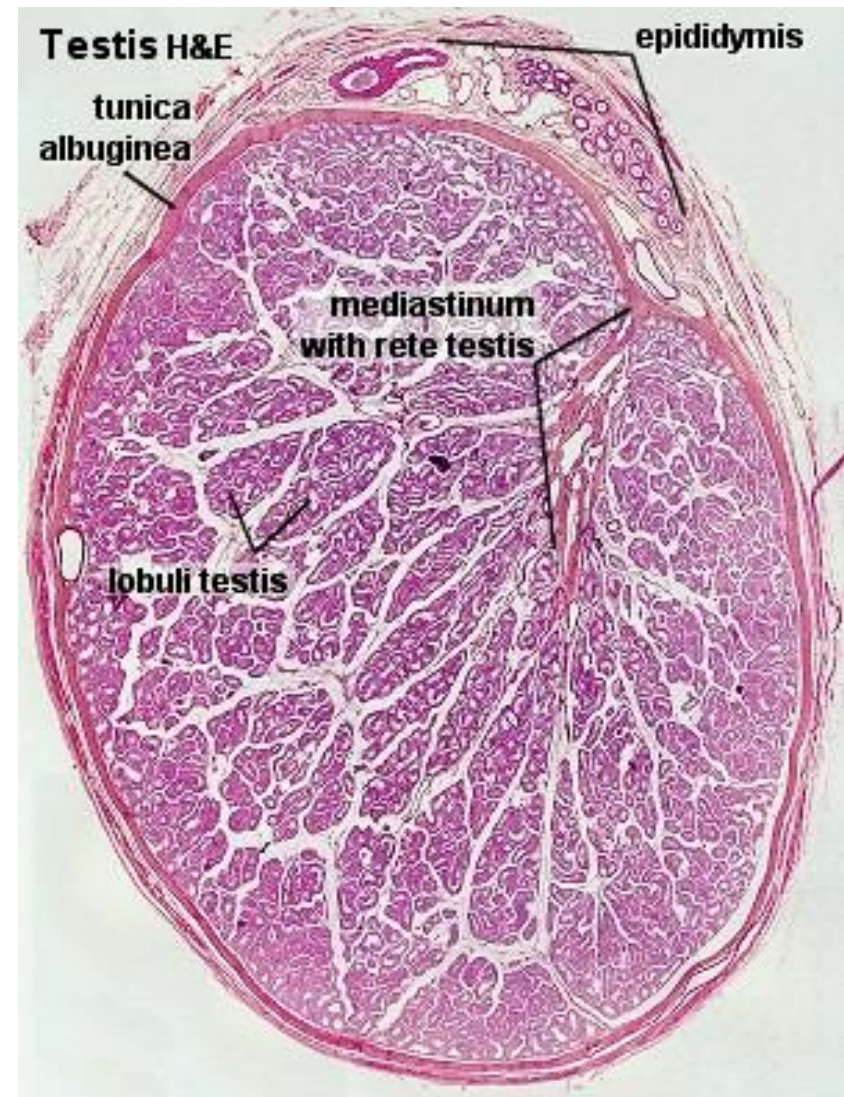
**Mediastinum testis**

**Lobule of testis-**

- **Seminiferous tubule**

- **Interstitial tissue**

**3. Tunica vasculosa**



# MALE REPRODUCTIVE SYSTEM

## • TESTIS

### TUNICA ALBUGINEA

- thick connective tissue capsule
- connective tissue septa divide testis into 250 lobules
- each lobule contains 1-4 seminiferous tubules and interstitial connective tissue

### (1) SEMINIFEROUS TUBULES

- produce sperm

### INTERSTITIAL TISSUE

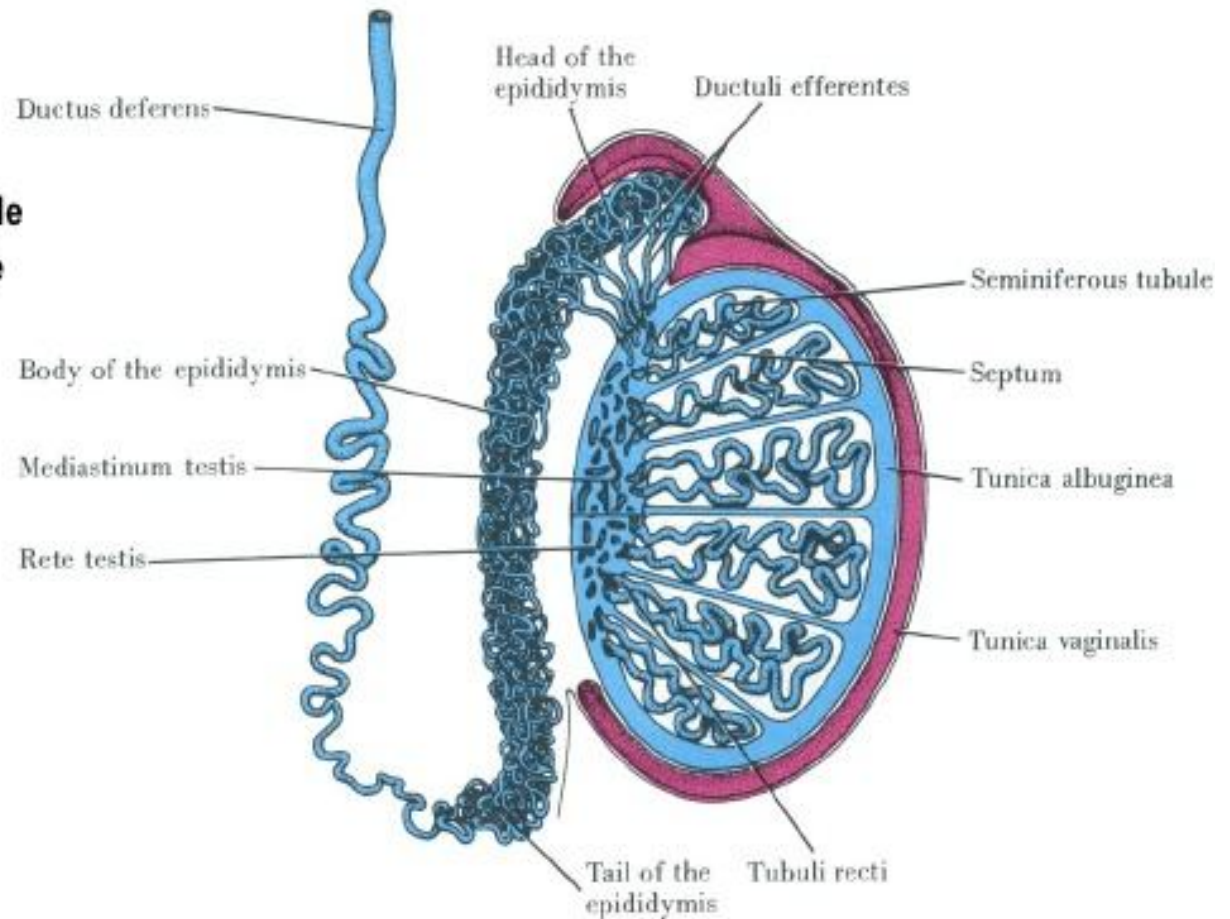
- contains Leydig cells which produce testosterone

### (2) RECTUS TUBULES

### (3) RETE TESTIS

### (4) EFFERENT DUCTULES

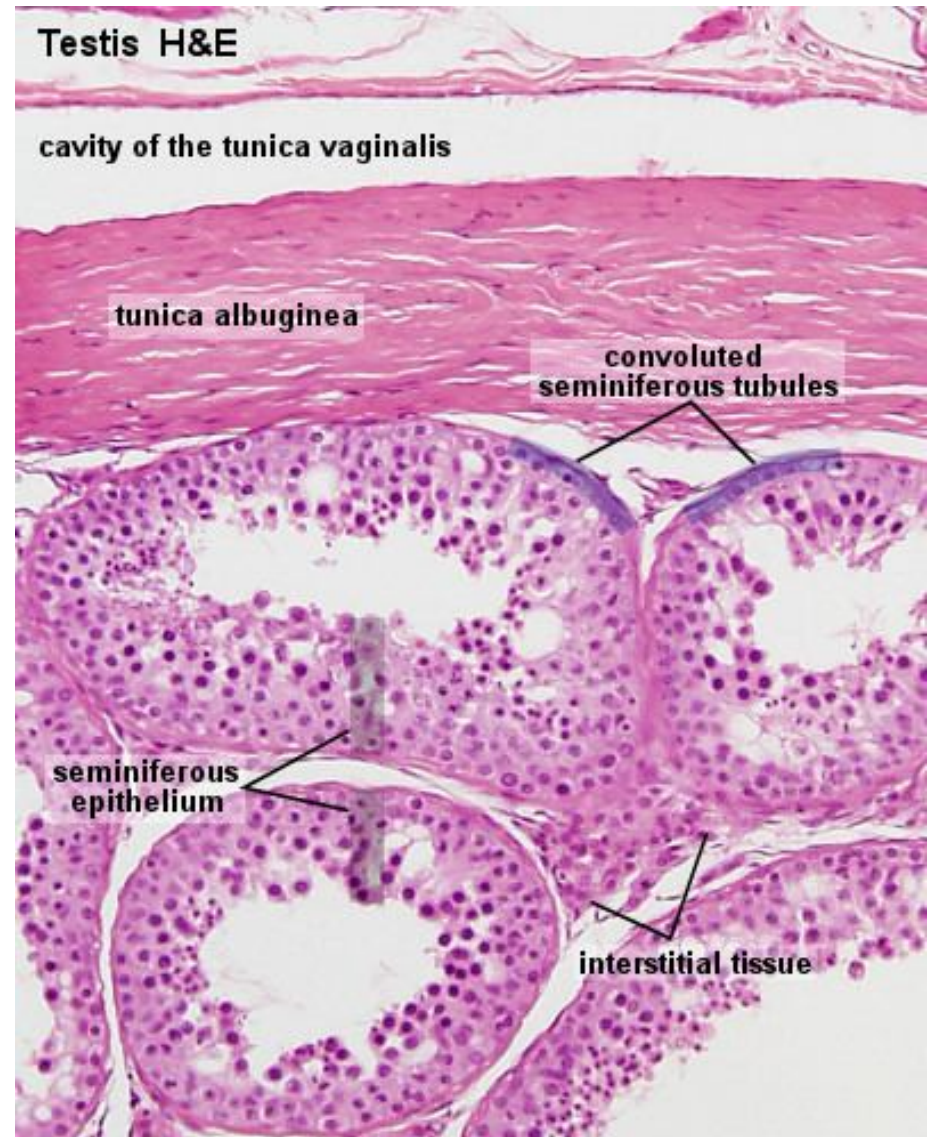
### (5) EPIDIDYMIS





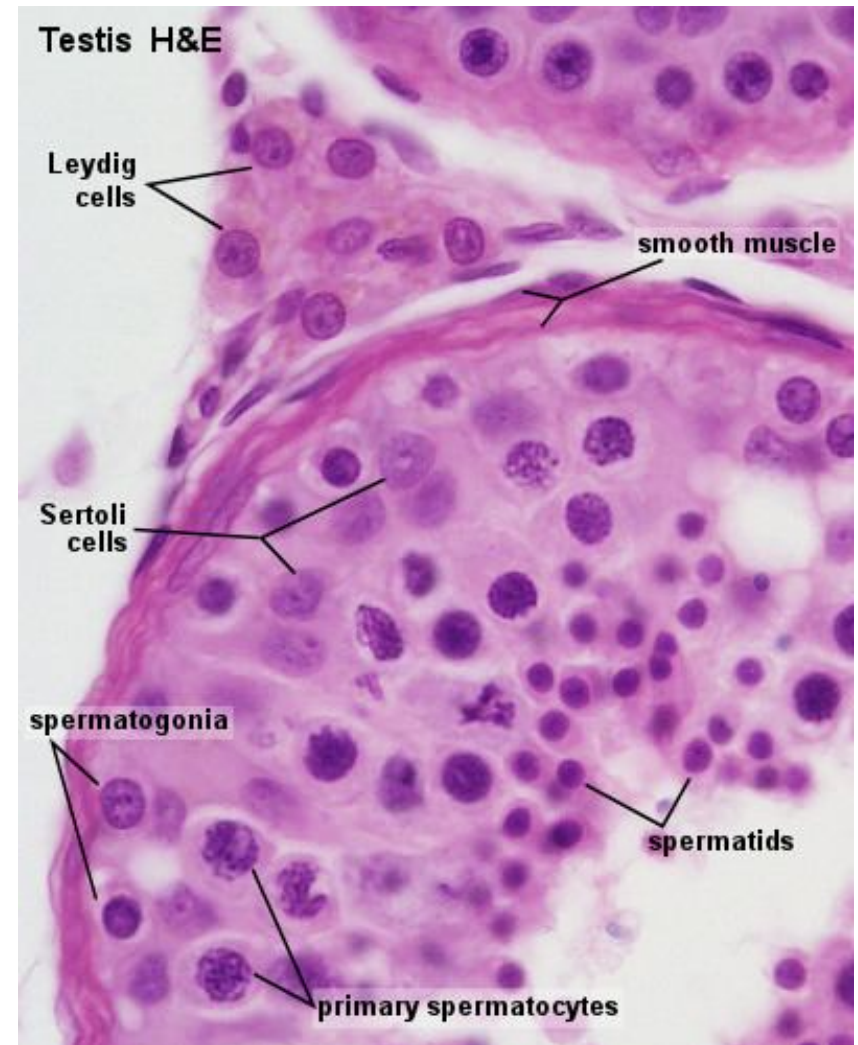
# Testis

- Tunica Albuginea
- Seminiferous tubules
- Cells in different stages of development
- **From basement membrane to lumen: Spermatogonia, spermatocytes, spermatids and spermatozoa**



# Testis

- **Seminiferous tubules:**  
**Lined by Stratified epithelium known as Germinal epithelium.**
- Germinal epithelium has 2 type of cells
  1. **Spermatogenic cells**-that produce sperms
  2. **Sertoli cells**-tall columnar cells, *lateral process* divide cavity (basal and luminal), that nourish the sperms



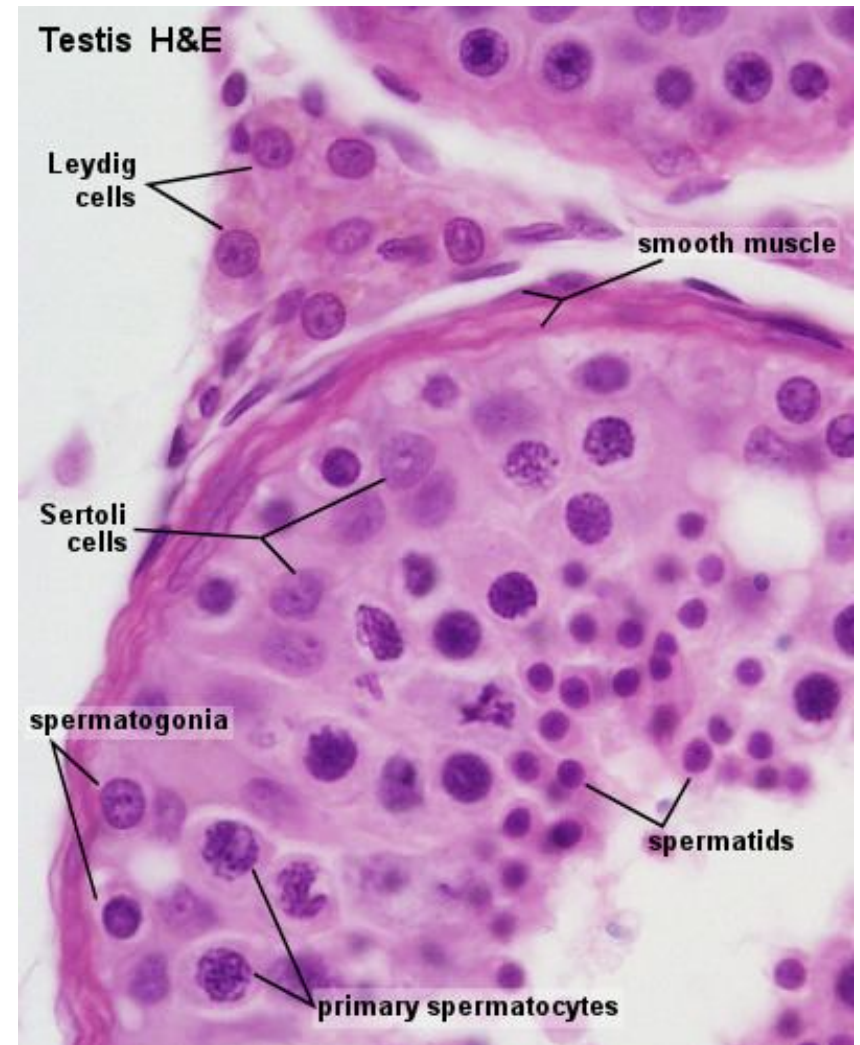
# **Sertoli cells**

## **Functions**

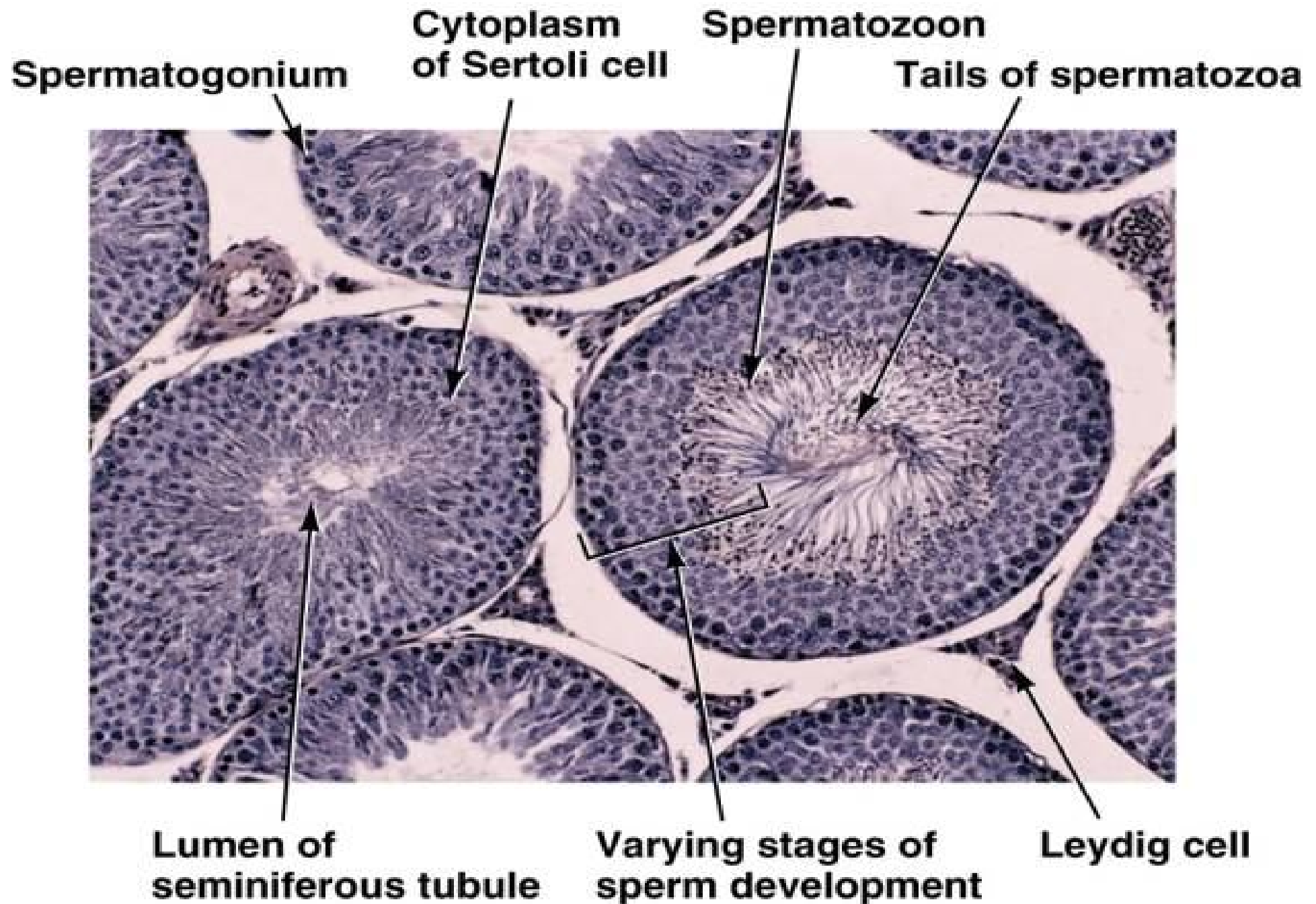
- **Physical support, nutrition and protection of the developing spermatids.**
- **Phagocytosis of excess cytoplasm from the developing spermatids.**
- **Phagocytosis of degenerating germ cells**
- **Secretion of fructose rich testicular fluid for the nourishment and transport of sperms**

# Testis

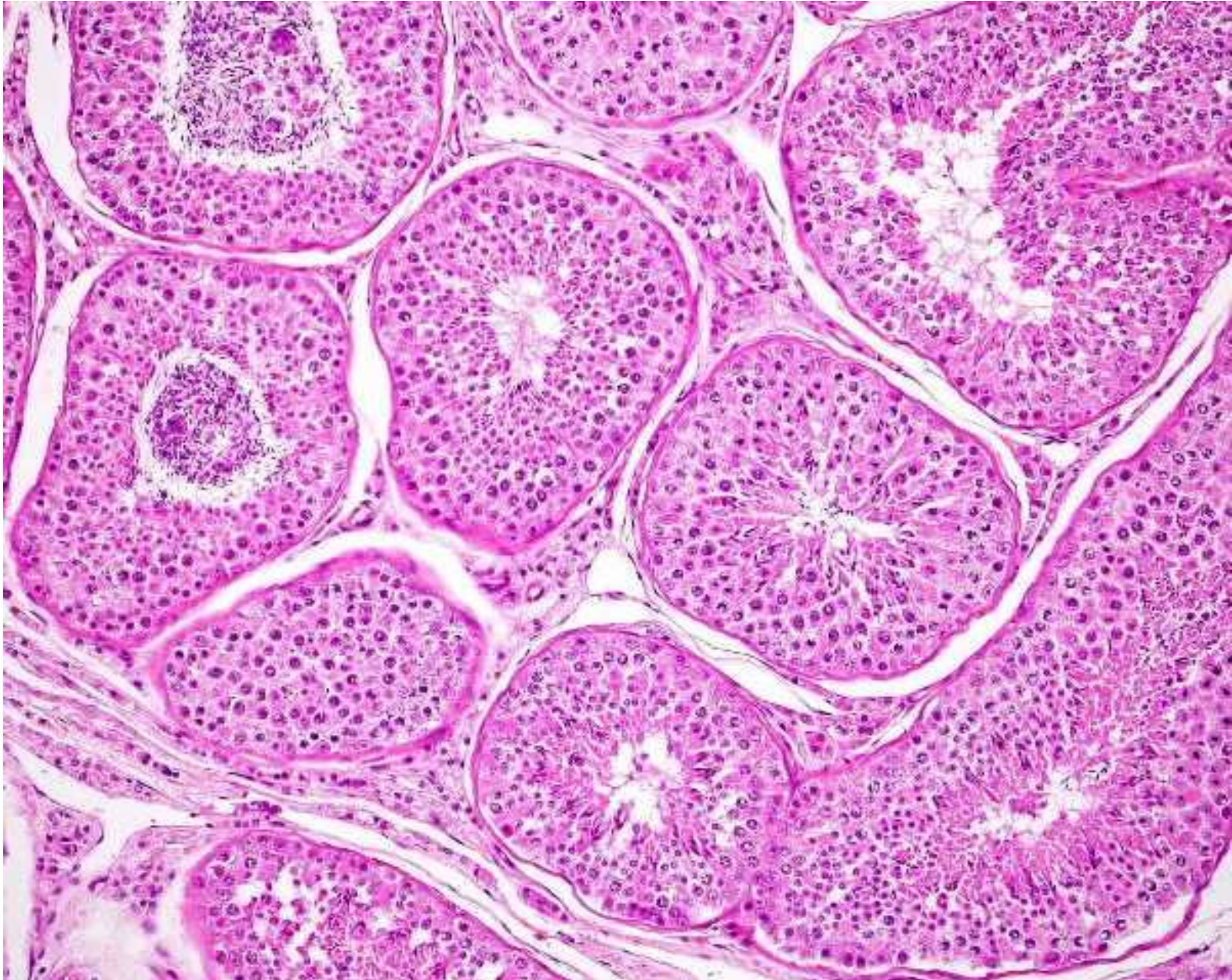
- **Basement membrane**
  - Myoid cells**
- **Interstitial tissue**
  - 1.blood vessels**
  - 2.Loose connective tissue cells**
  - 3.Leydig cells- testosterone secreting interstitial cells**



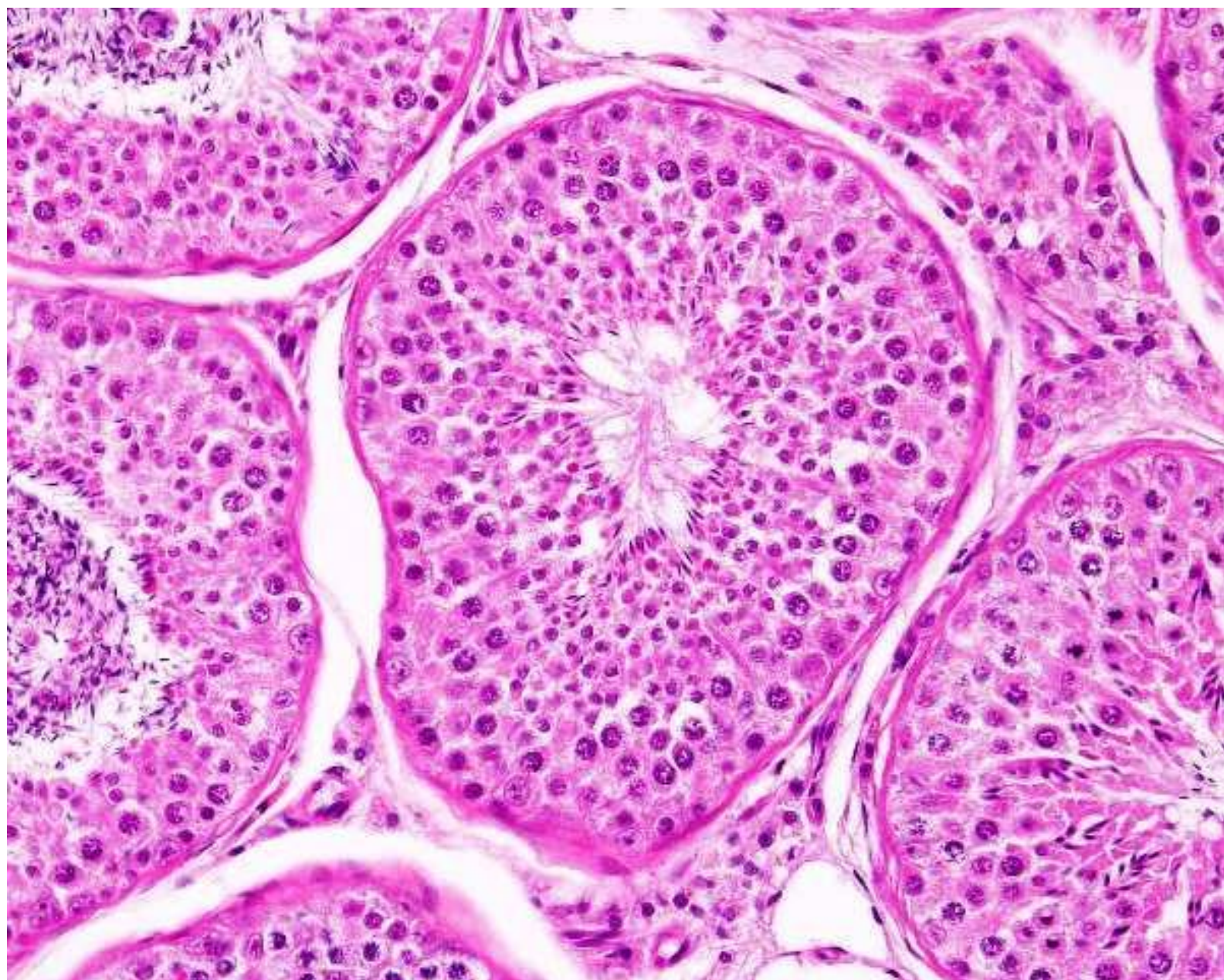




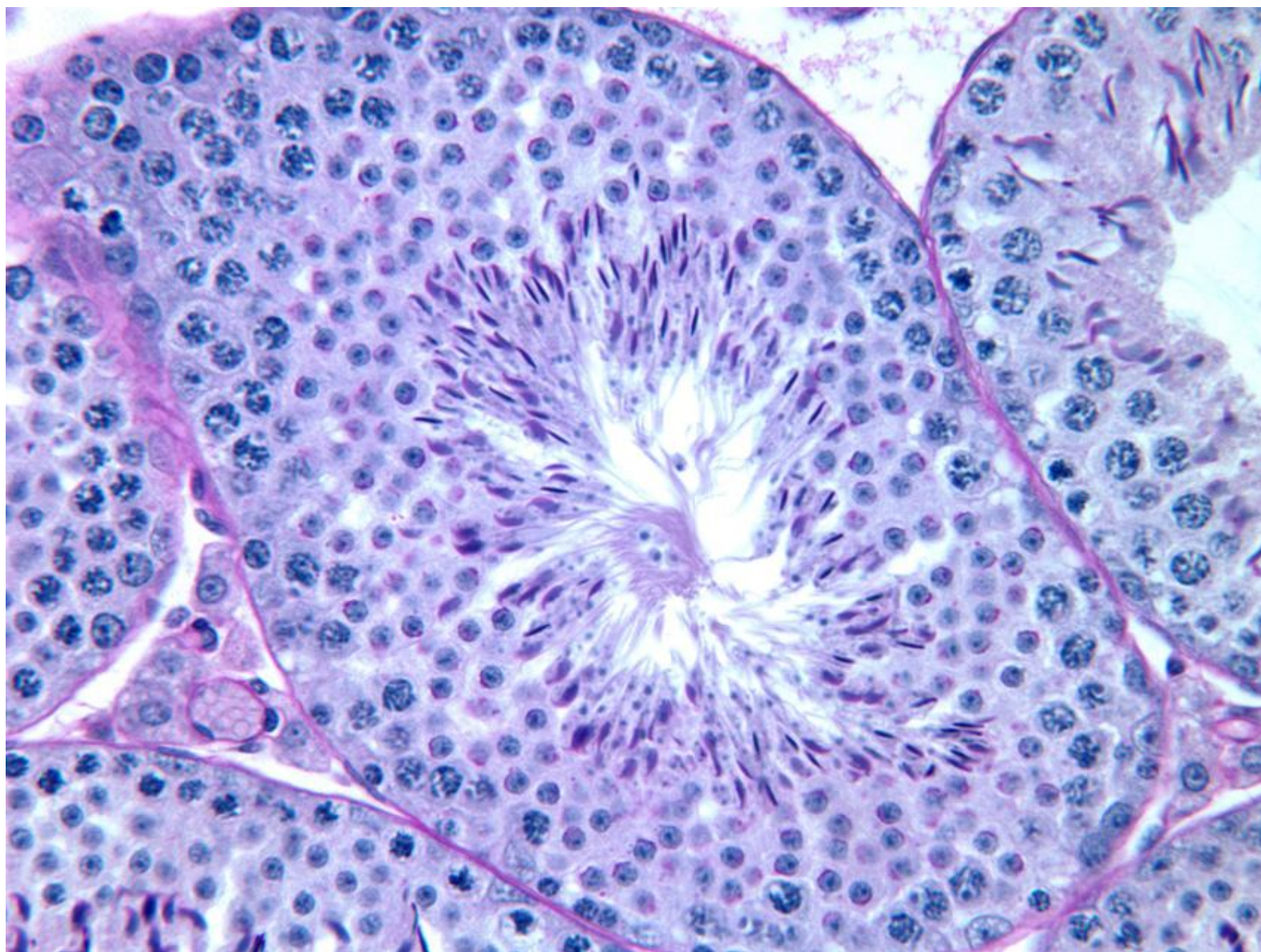
# Seminiferous tubules













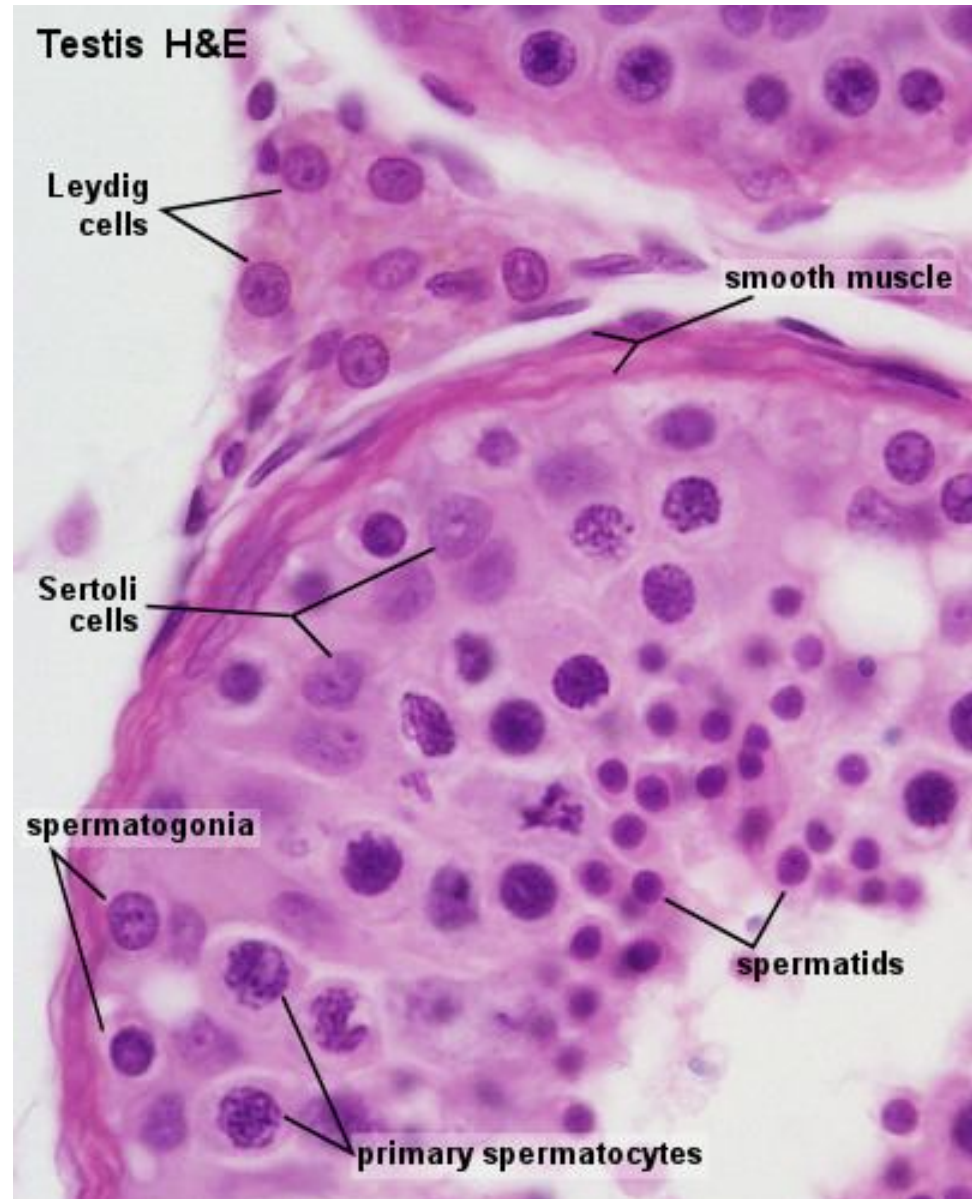
# SERTOLI CELLS

**Sertoli Cells**

**Sustentacular  
cells**

**Supporting cells**

- Extend from the basement membrane to the lumen
- Slender, elongated cells with irregular outlines

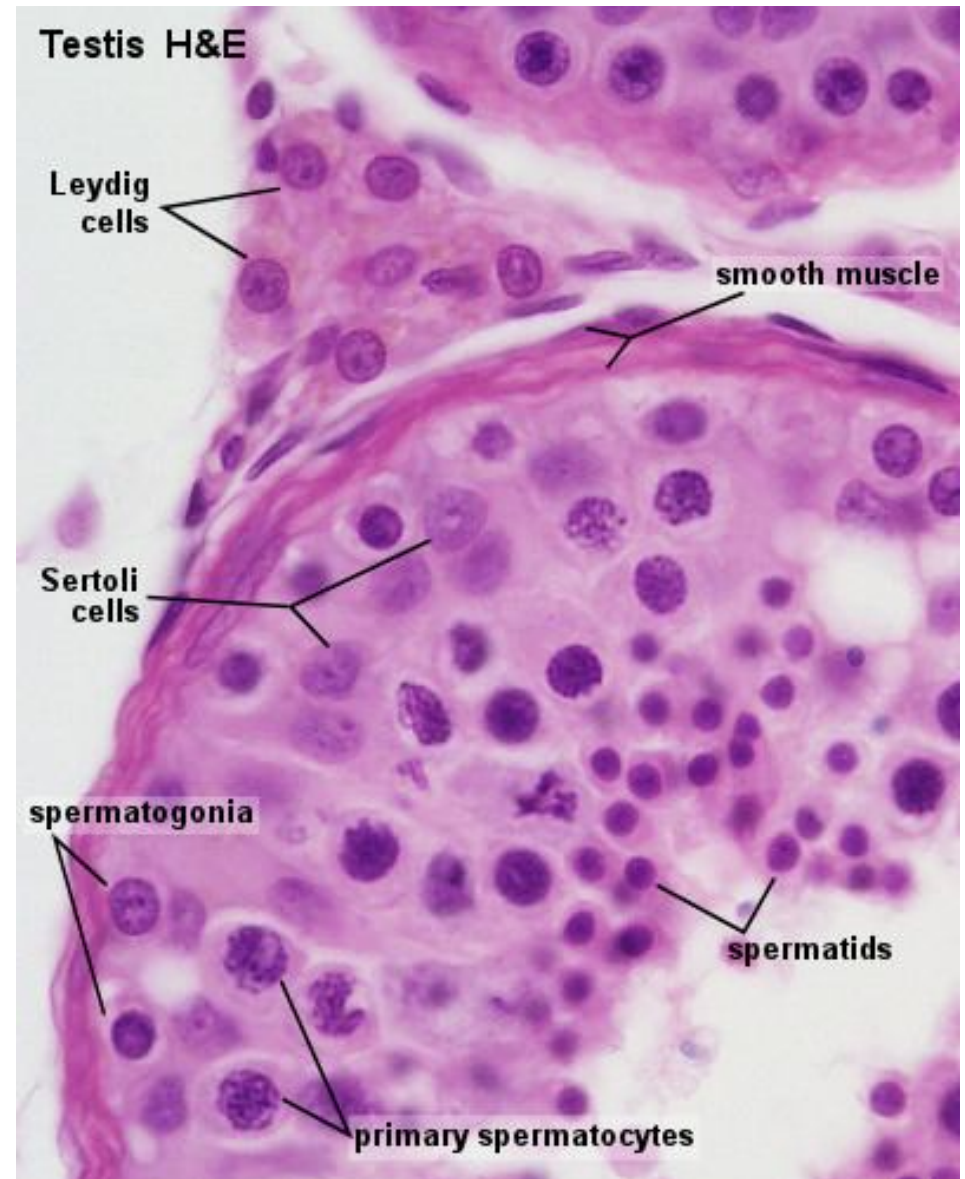


# Leydig cells

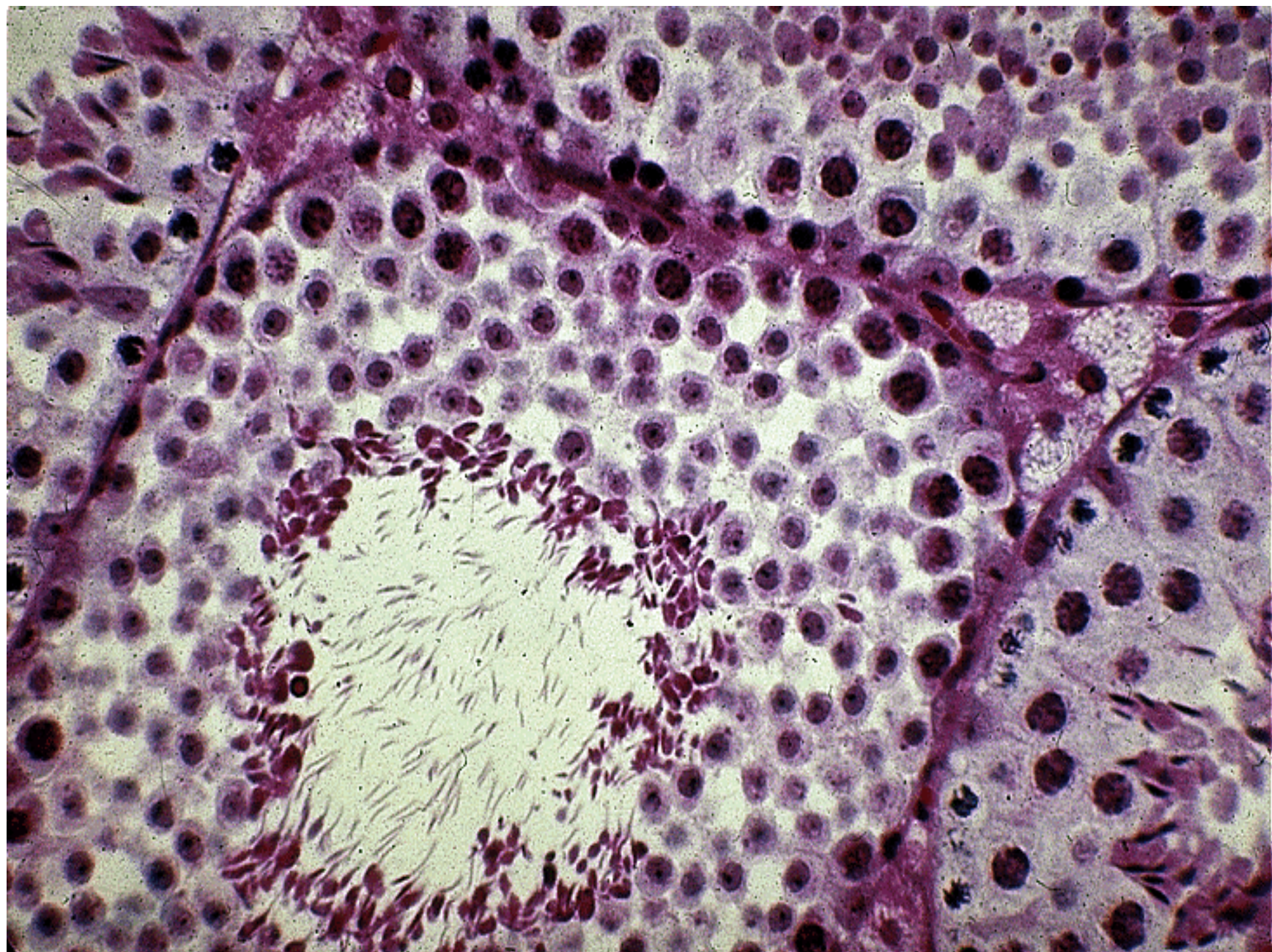
## Interstitial cell of Leydig

- Present in the interstitial connective tissue of the testis with blood vessels and fibrocytes

- Produce testosterone









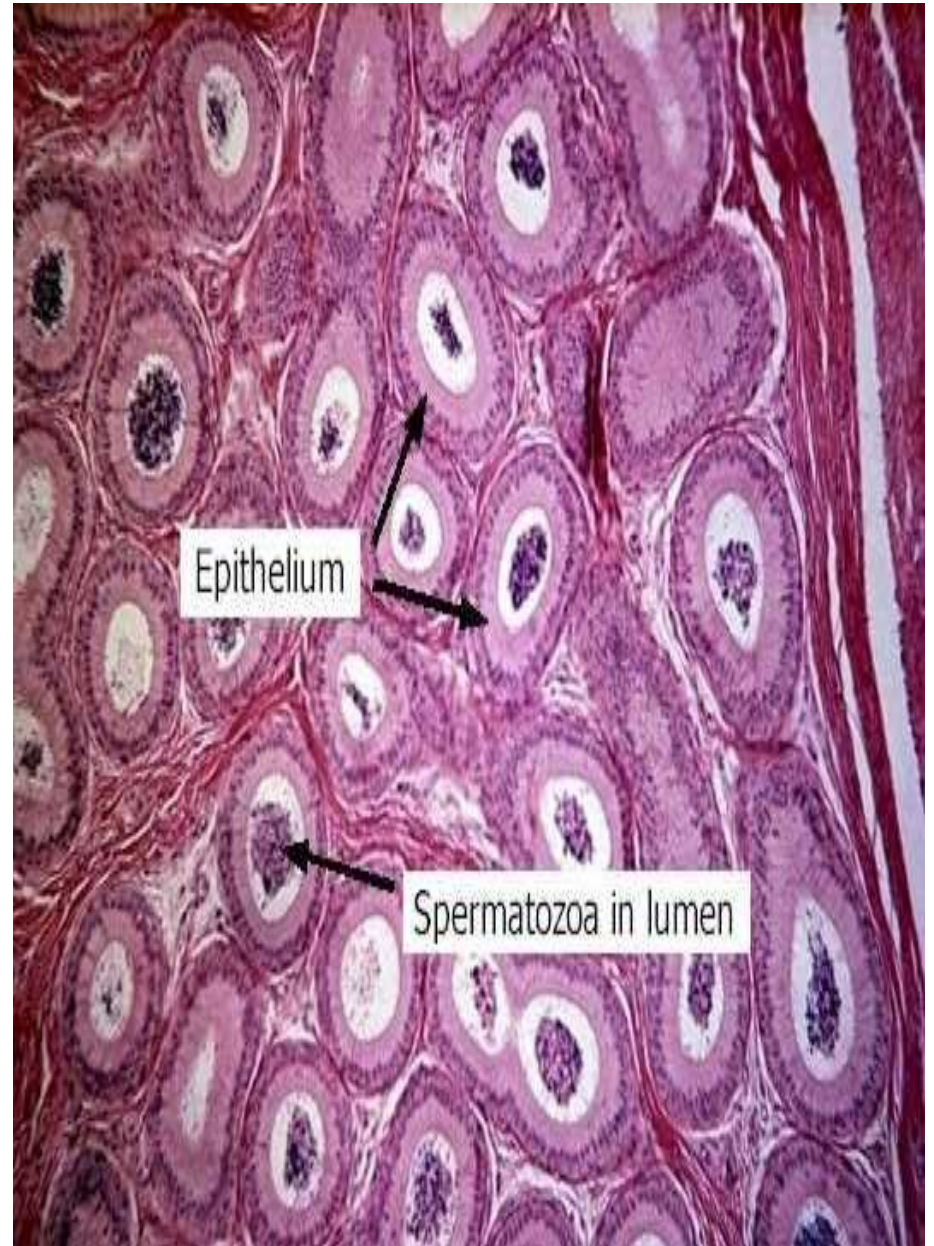
# **Blood Testis Barrier**

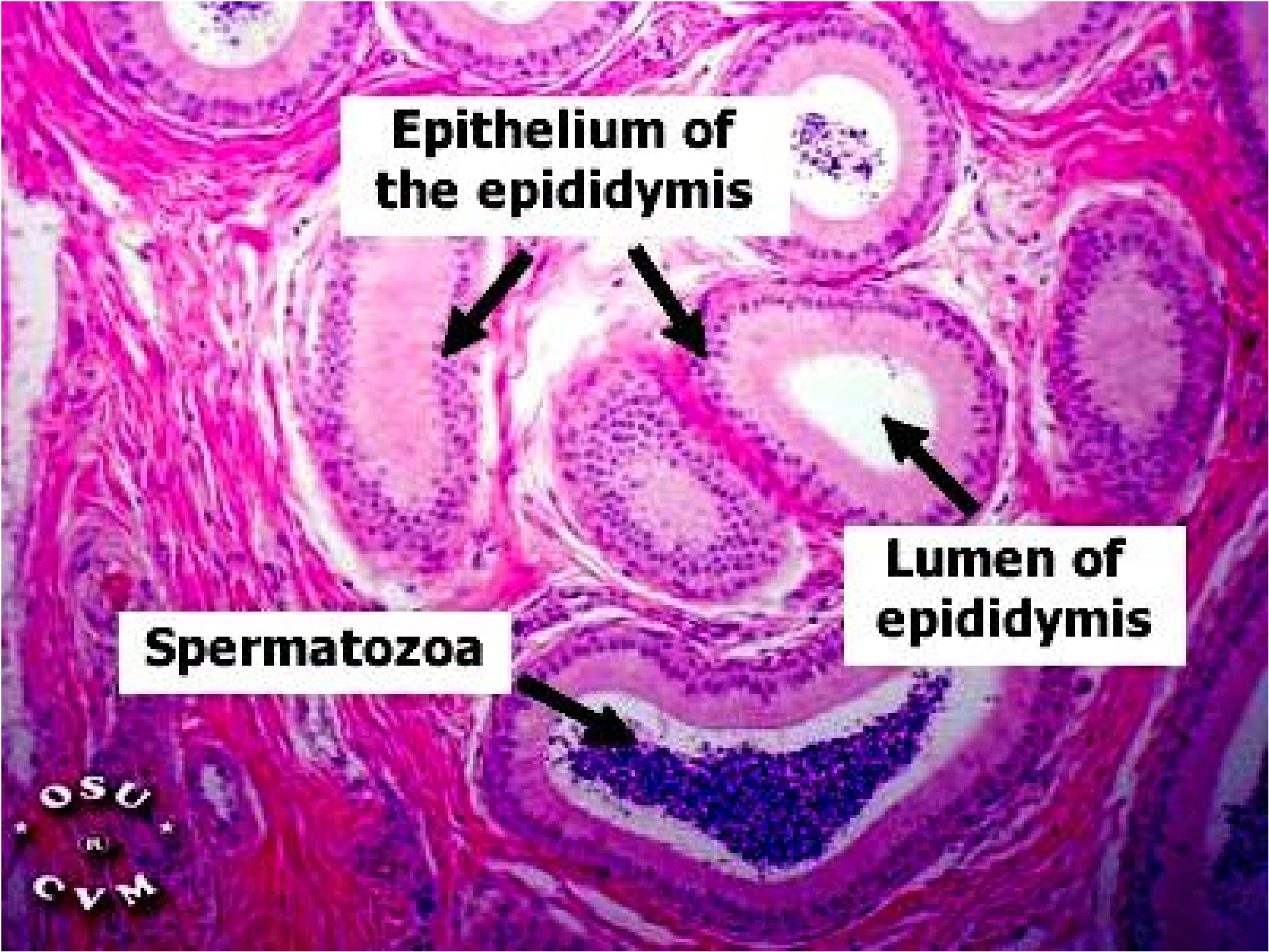
- **The adjacent cytoplasm of Sertoli cells are joined by occluding tight junctions, producing a blood testis barrier.**
- **It protects the developing cells from immune system by restricting the passage of membrane antigens from developing sperm into the blood stream.**
- **Thus protecting autoimmune response to the individual's own sperm.**



# Epididymis

- **Ductus Epididymis**
- **Epithelium**
  - *Pseudo stratified columnar*
    - 1-Principal cells-**  
large columnar cells with long microvilli (stereocilia)
    - 2- Basal cell-**  
Small,germinative cells
  - **Spermatozoa in lumen**
- **Smooth muscle layer**





**Epithelium of  
the epididymis**

This histological section shows the epididymis, a structure in the male reproductive system. The image displays several cross-sections of the epididymal tubules. The tubules are lined by a simple cuboidal epithelium. The central part of each tubule is the lumen, which contains a large number of spermatozoa, appearing as small, dark, oval-shaped structures. The surrounding tissue is composed of connective tissue and smooth muscle fibers, stained pink. Arrows point from the text labels to the corresponding structures in the image.

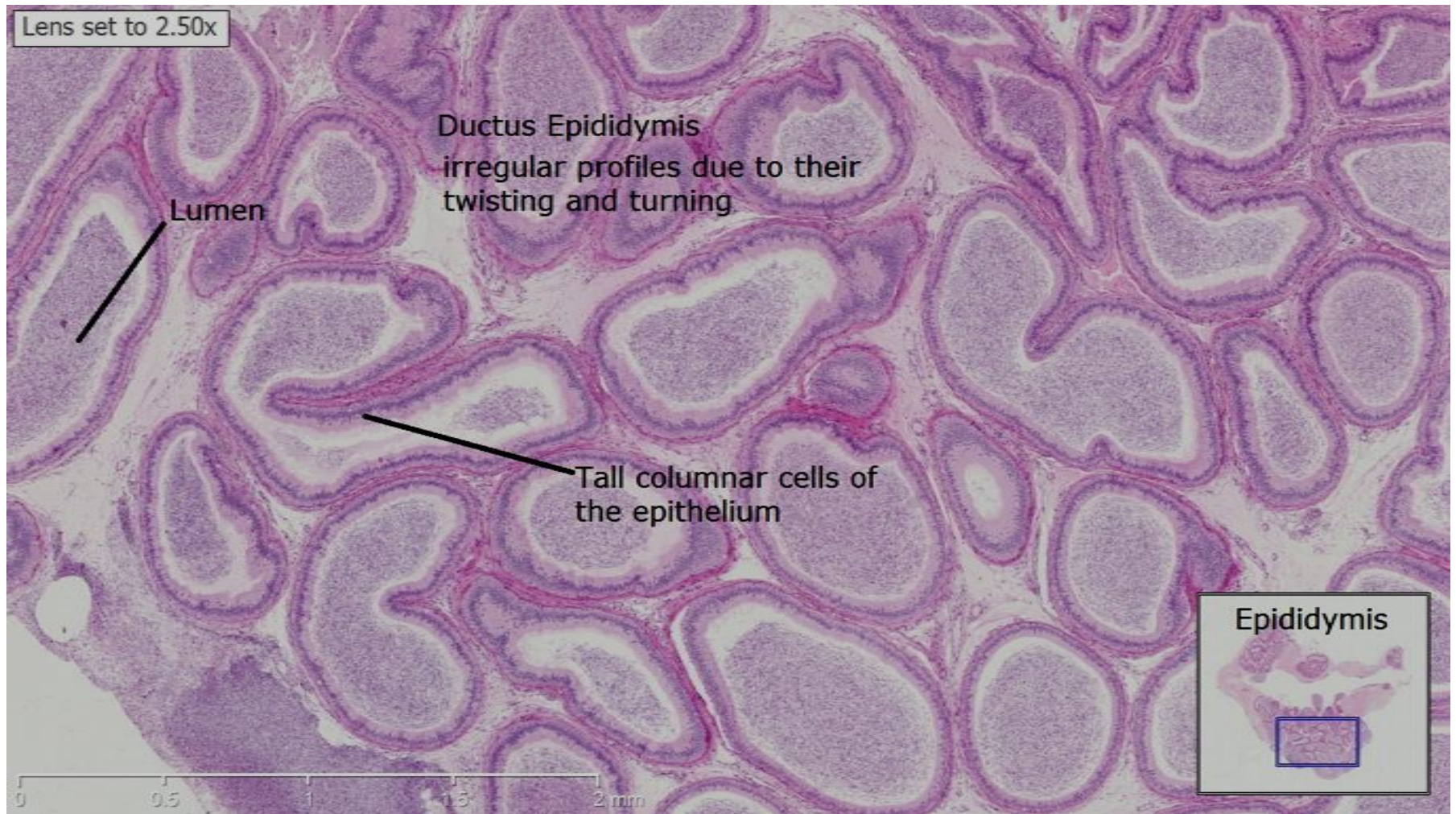
**Lumen of  
epididymis**

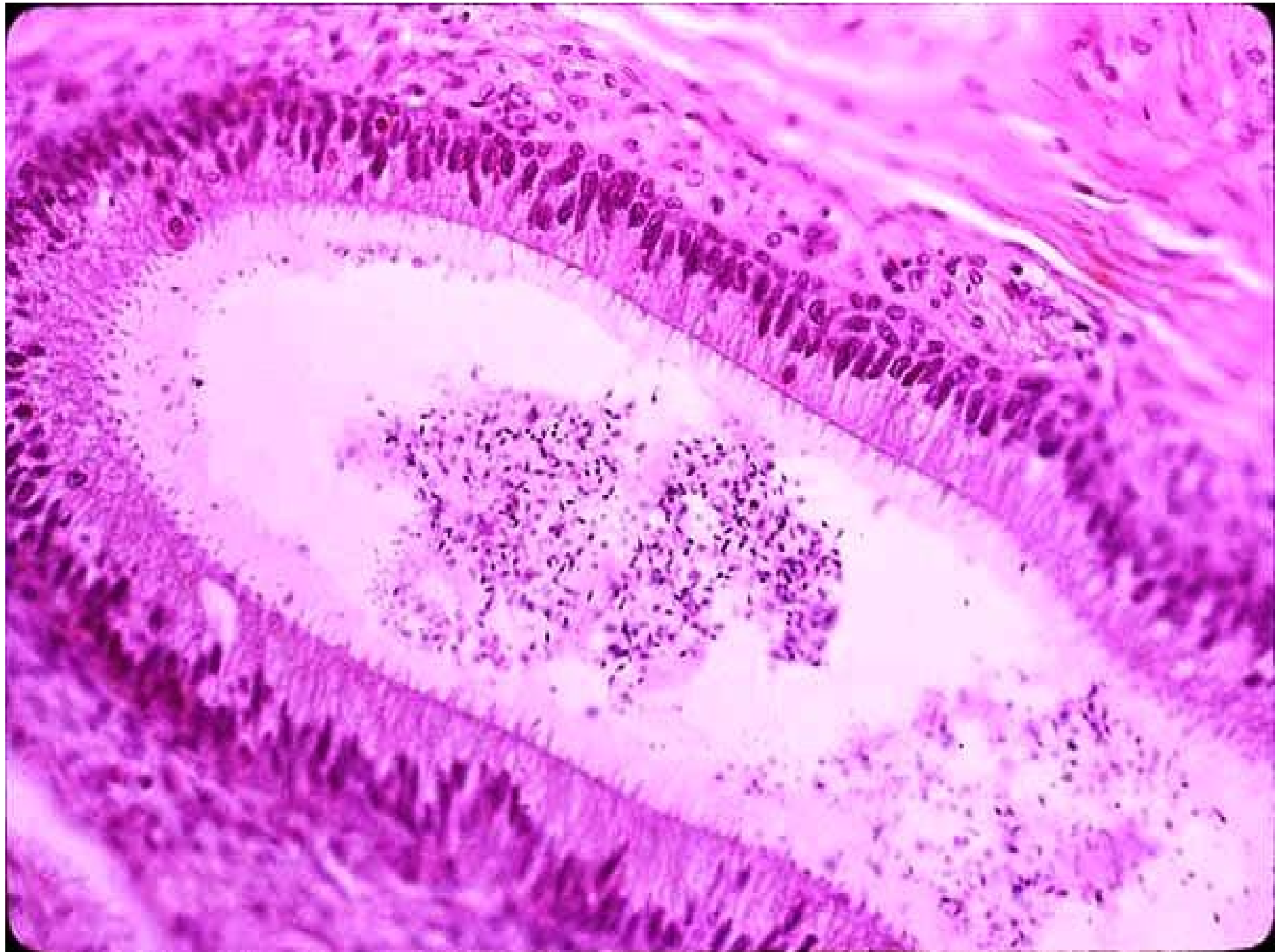
**Spermatozoa**

OSC  
(R)  
CVM

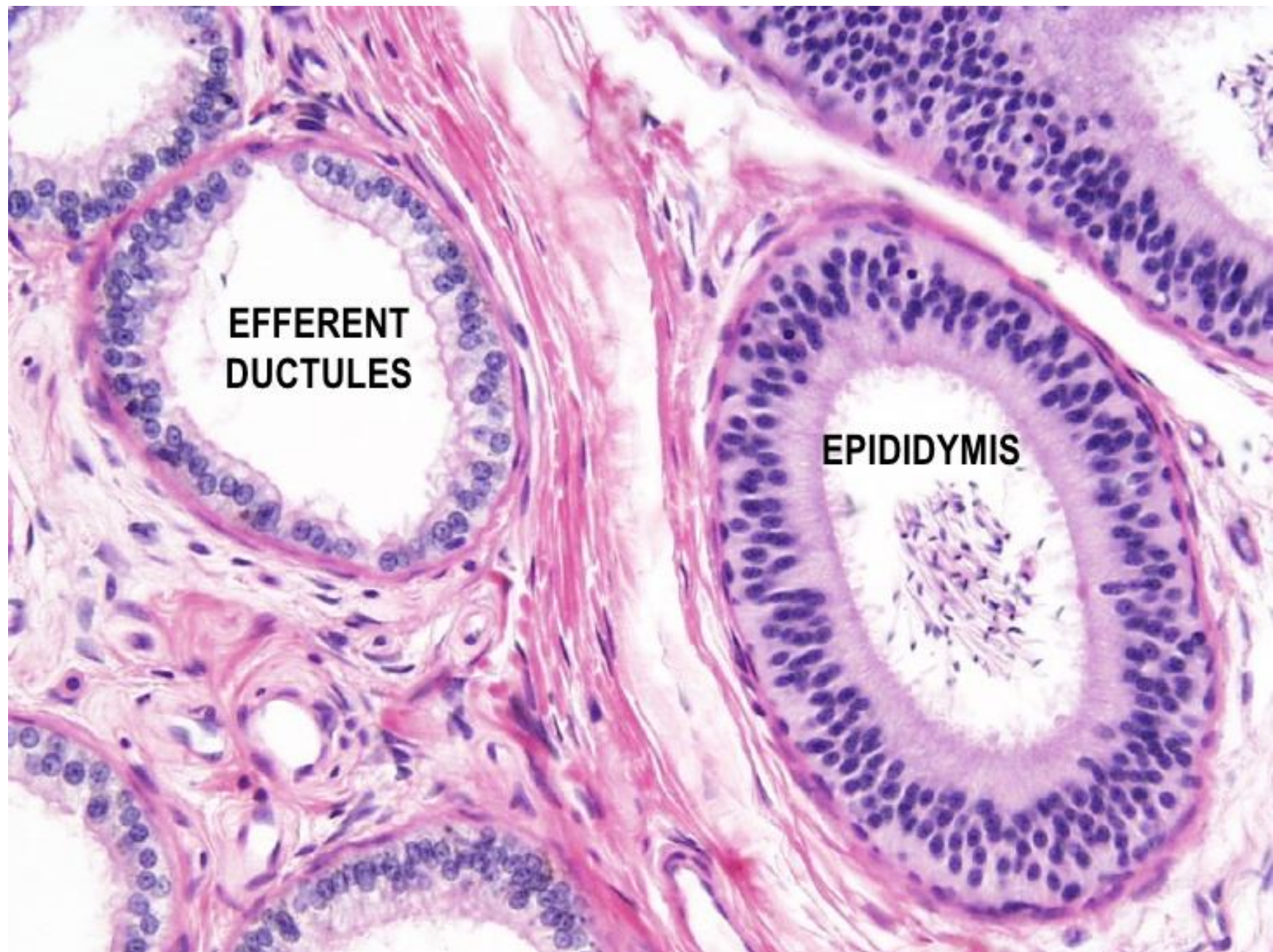


# Epididymis



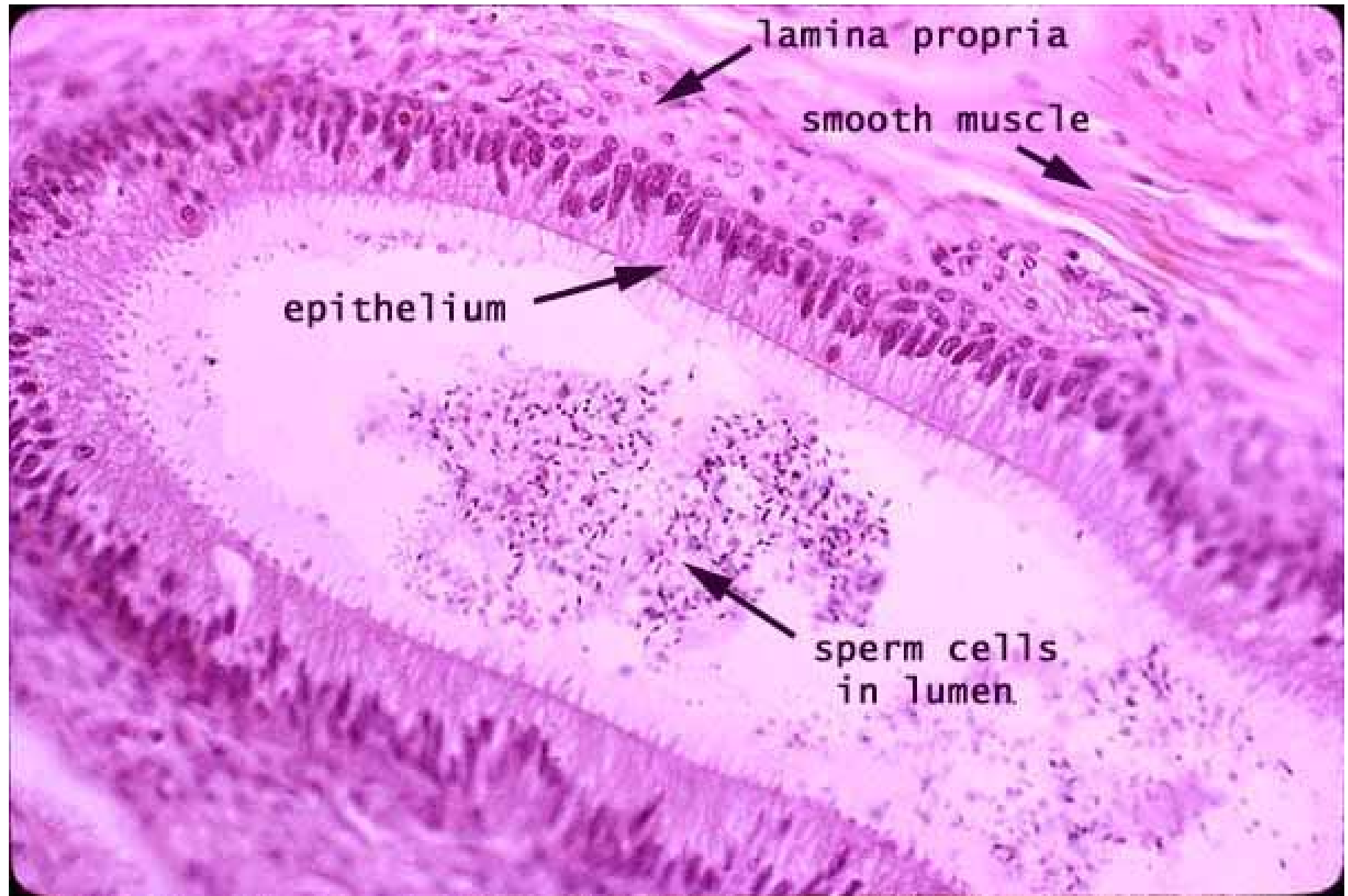


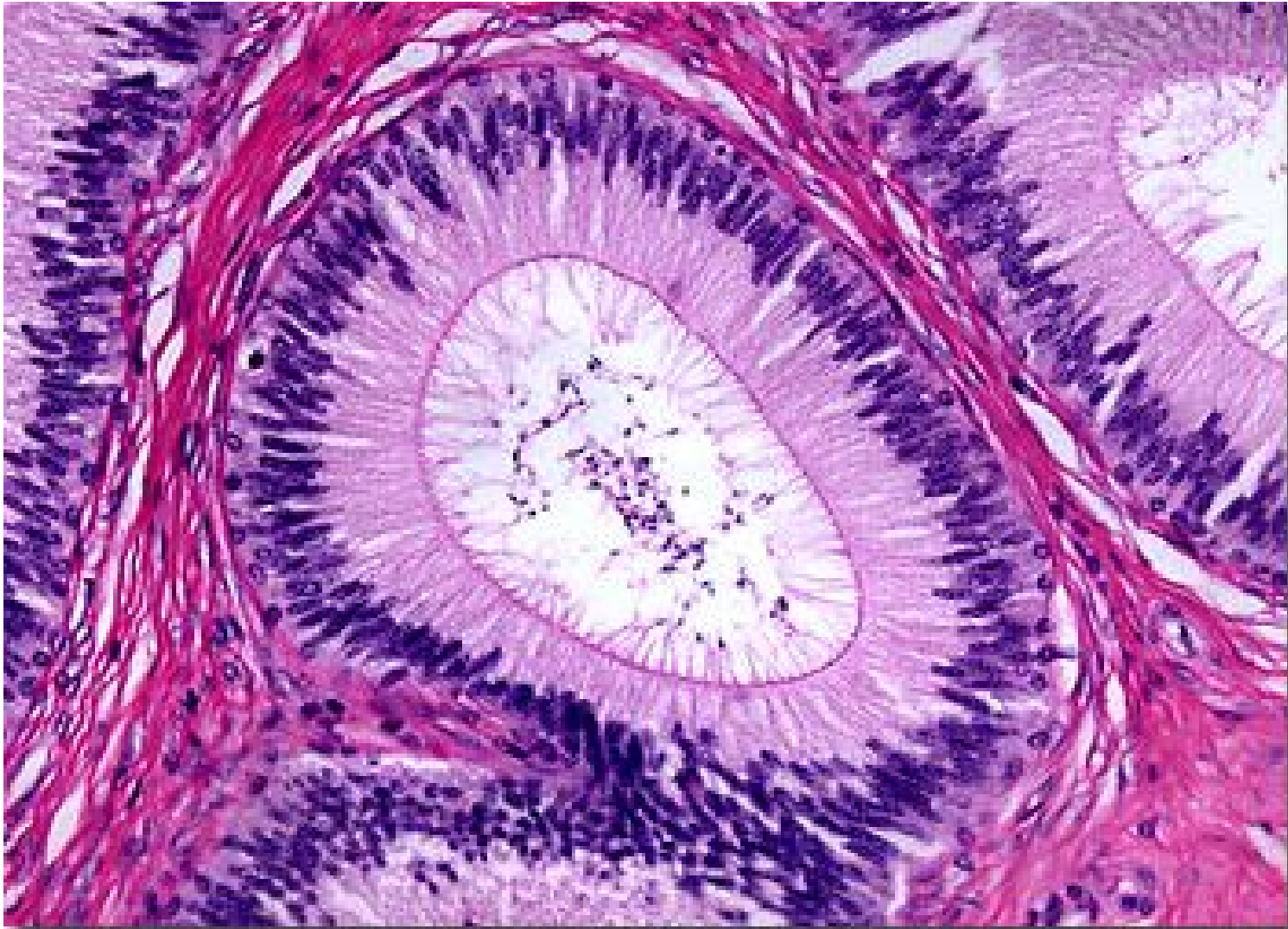




**EFFERENT  
DUCTULES**

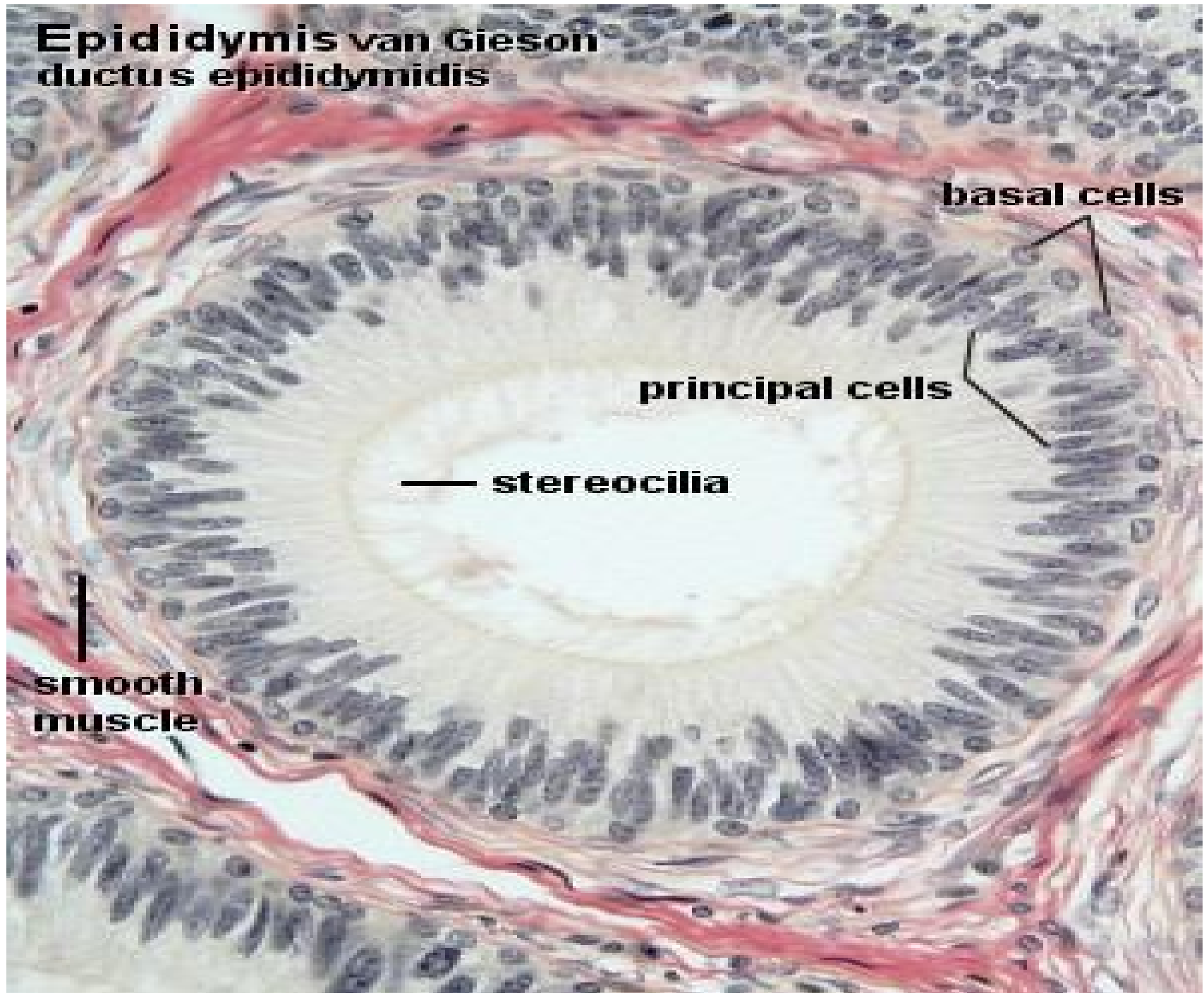
**EPIDIDYMIS**



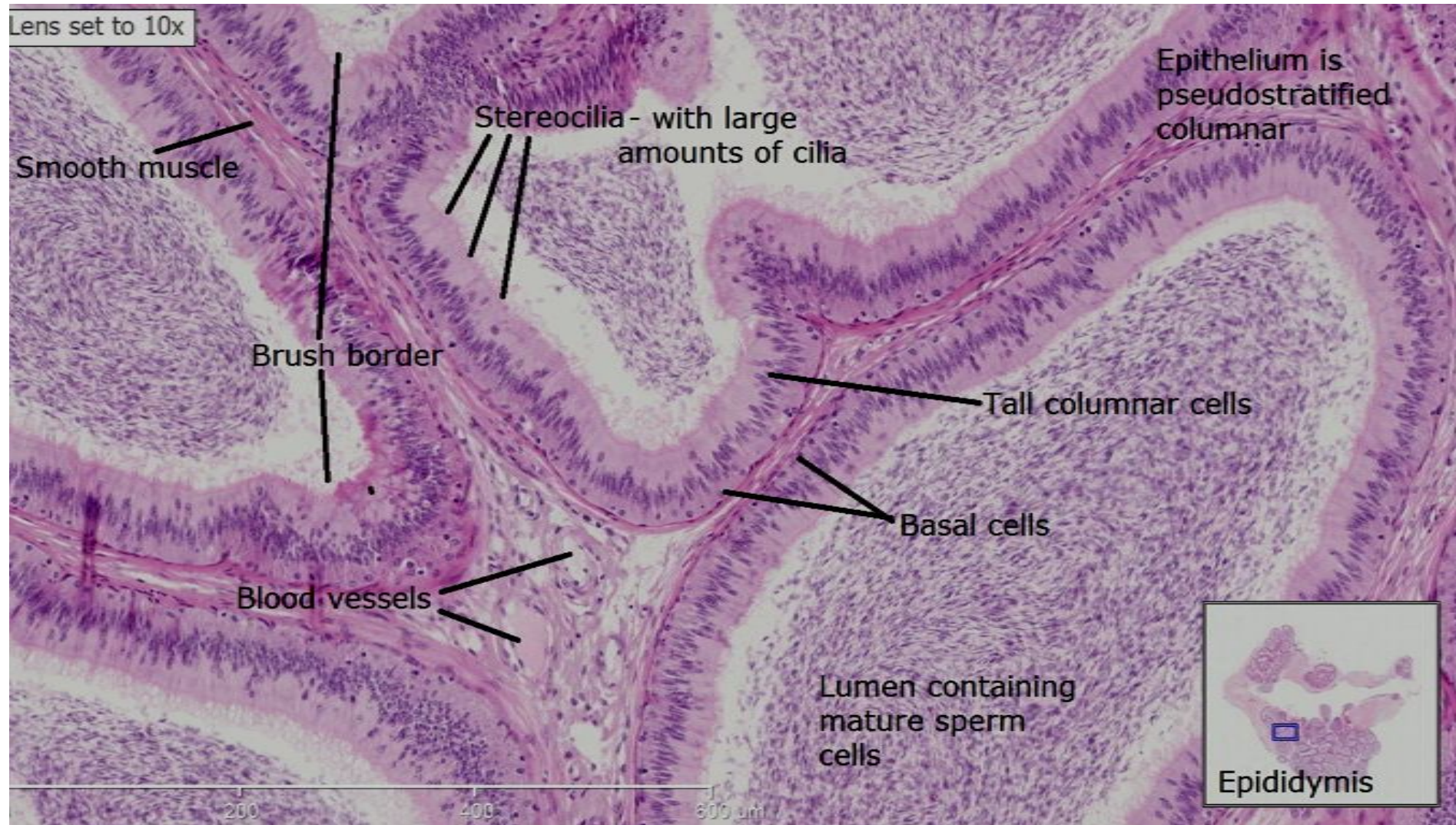


**Stereocilia are long branching Microvilli**  
**Absorb the testicular fluid and phagocytose**  
**abnormal or degenerating sperm cells**

**Epididymis van Gieson  
ductus epididymidis**

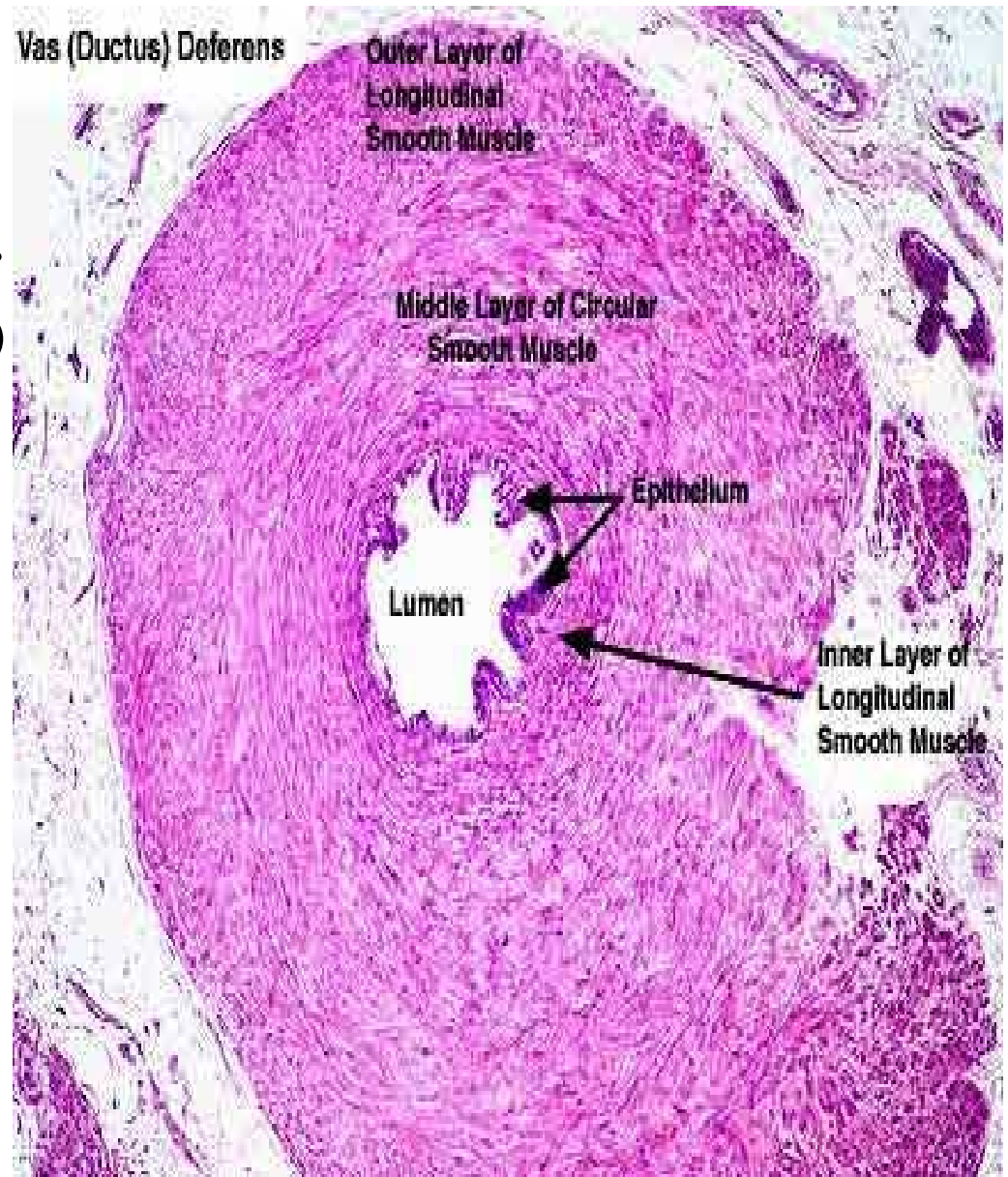






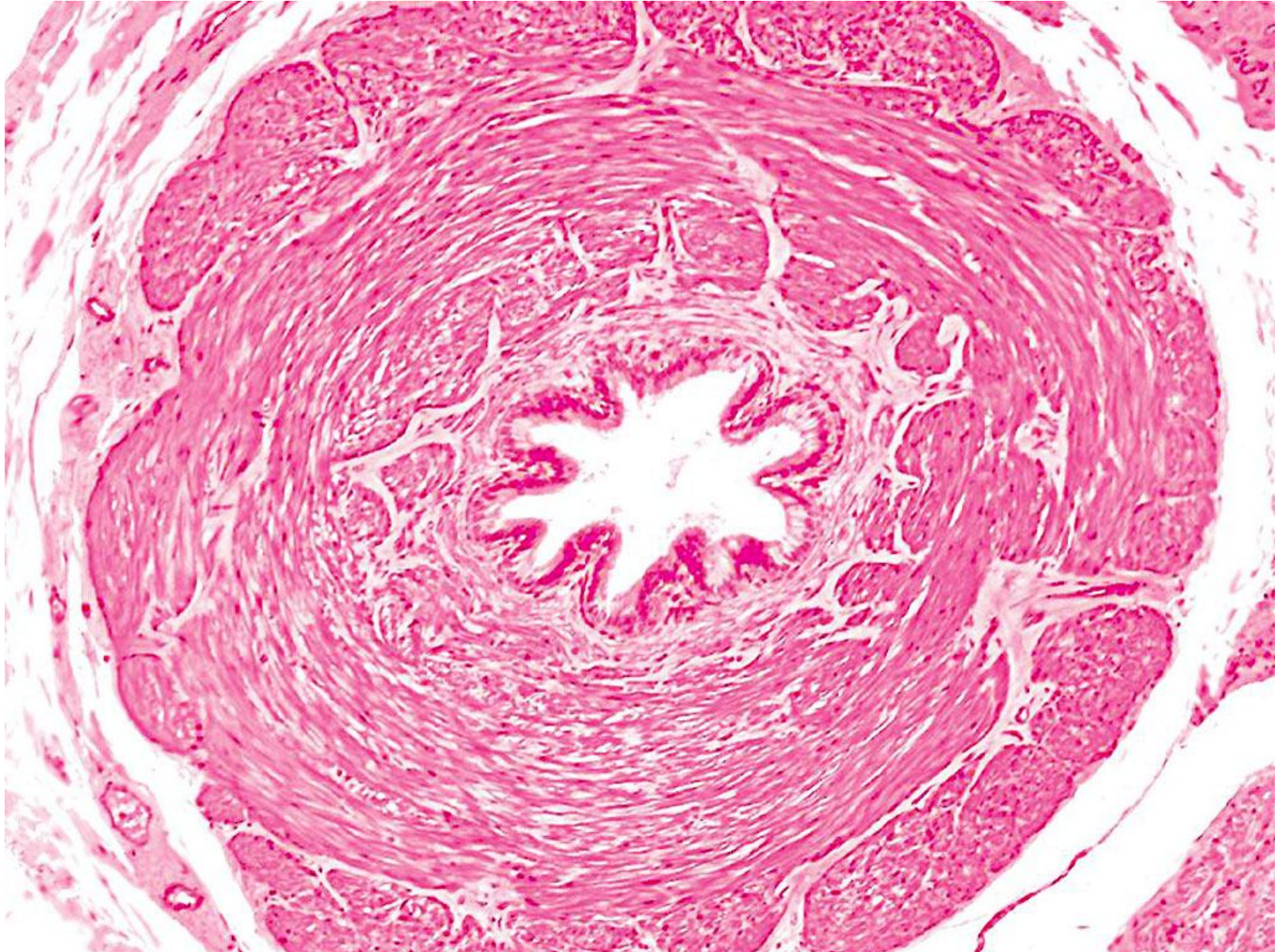
# Vas deferens

- **Mucosa**
  - **-Epithelium**  
Pseudostratified columnar with microvilli (stereocilia)
  - **-Lamina propria**
- longitudinal folds
- **Muscle layer**
  - Inner longitudinal
  - Middle circular (thickest)
  - Outer longitudinal
- **Adventitia**



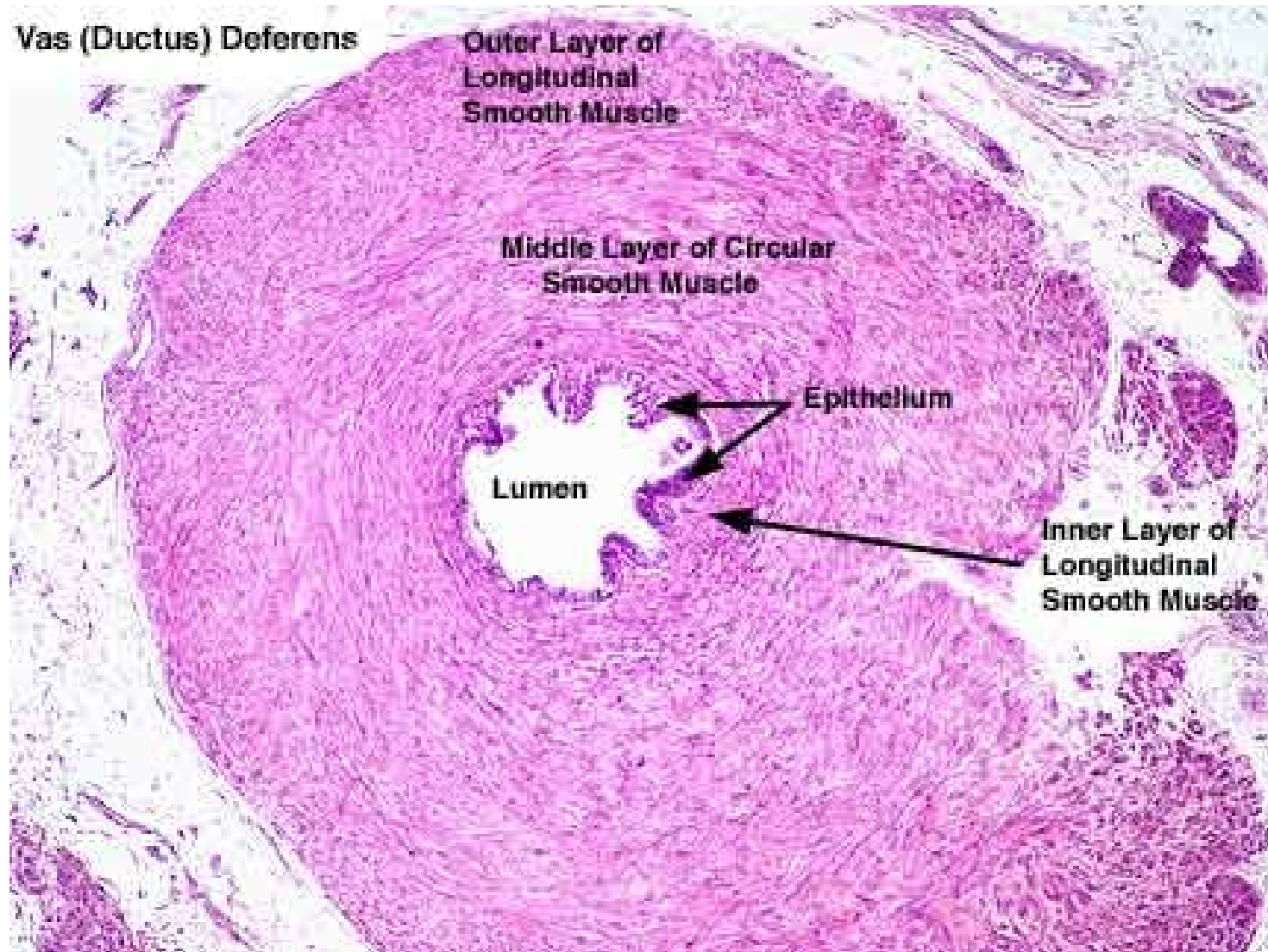


# Vas deferens

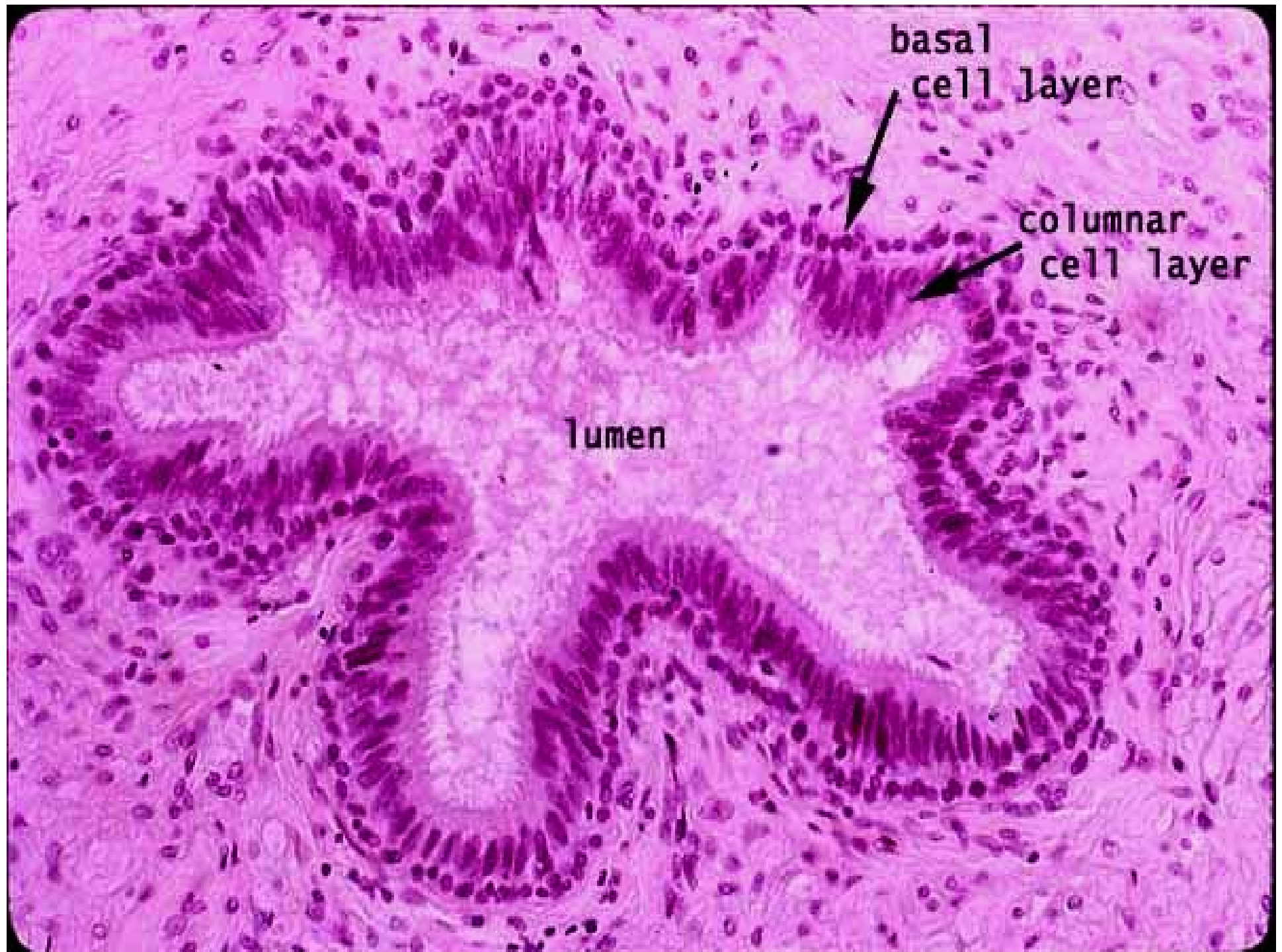




## Narrow irregular lumen of Vas deferens

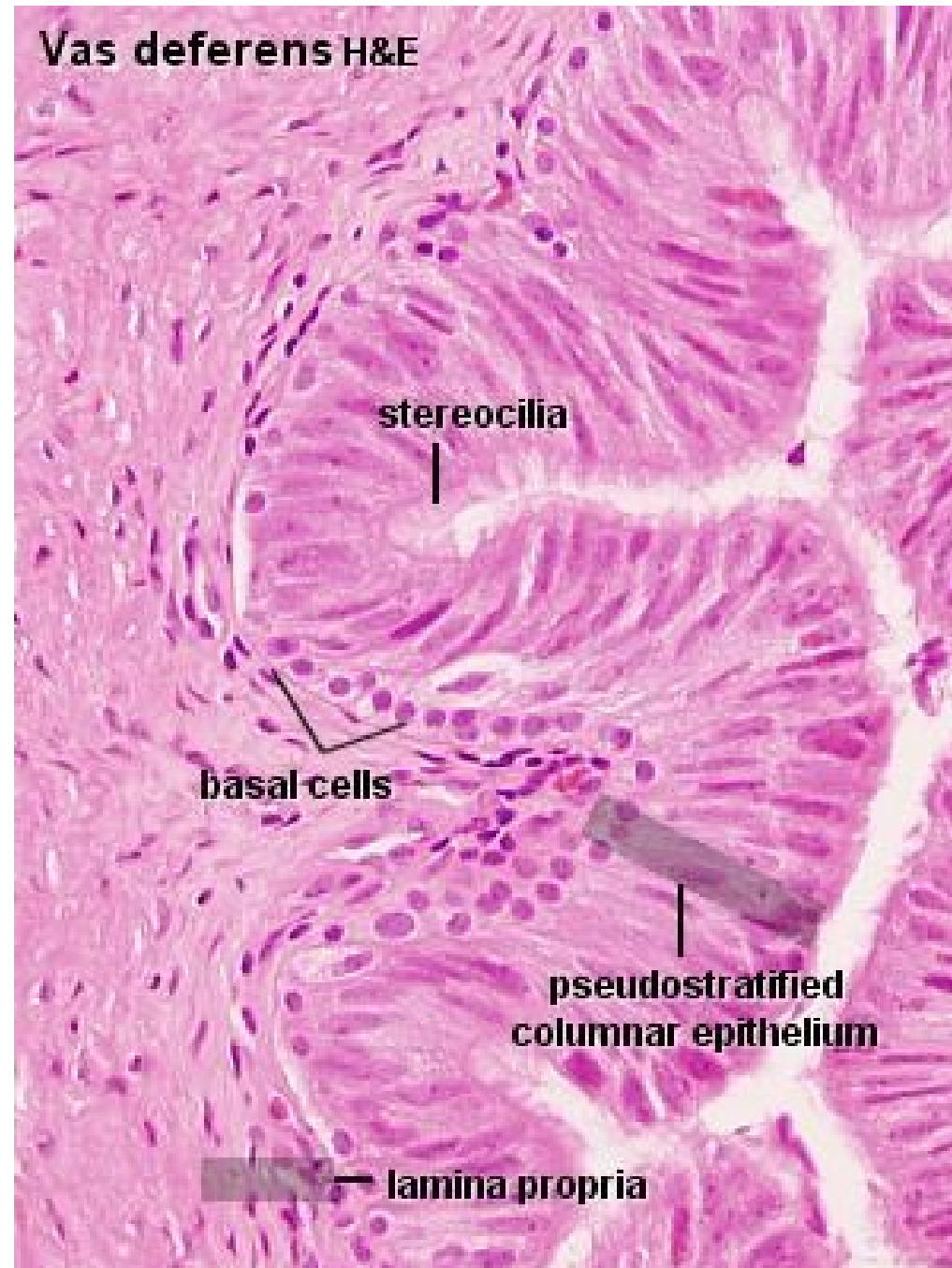


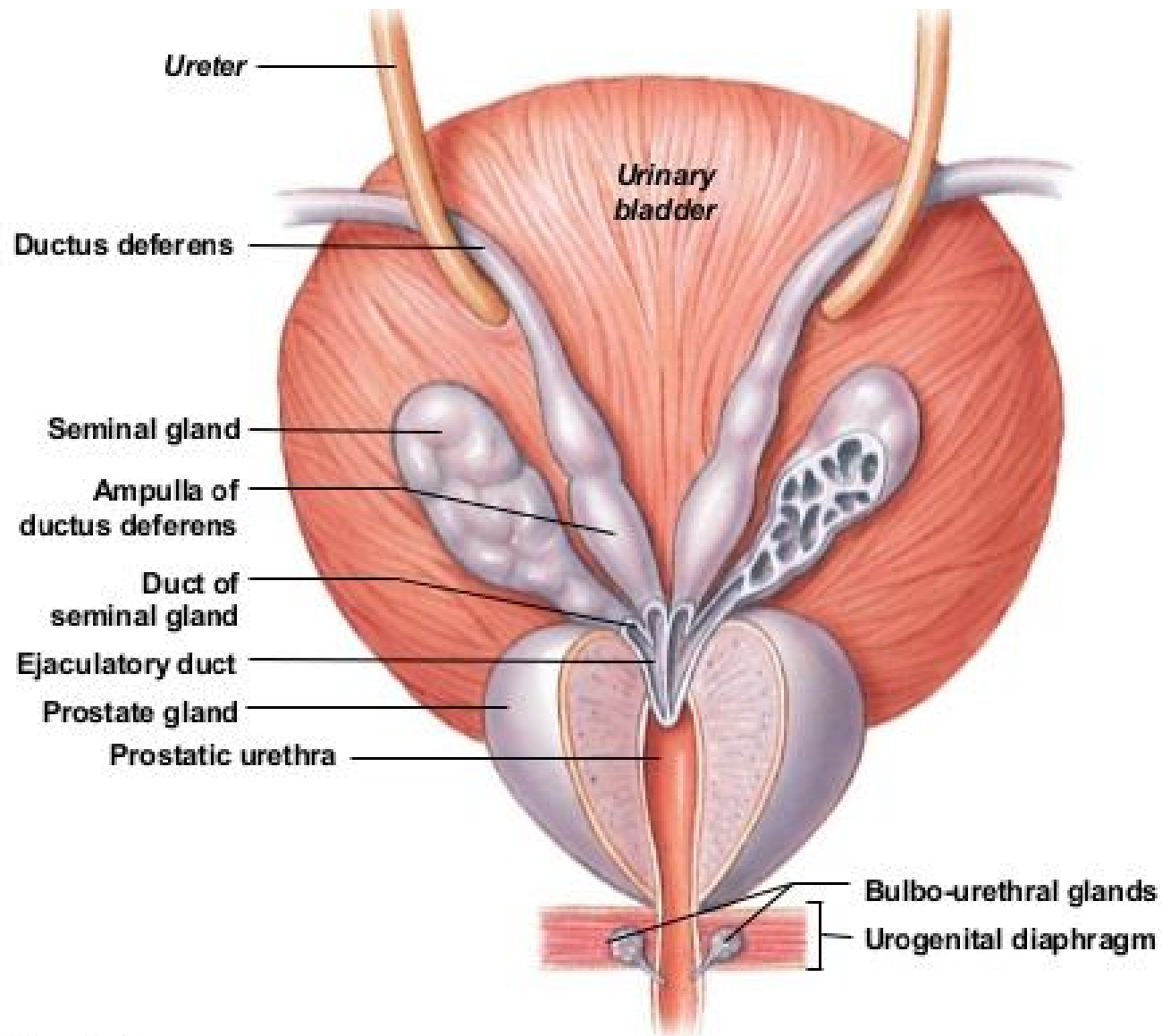
**Contractility of the Smooth muscle provides assistance in the movement of the sperm**





# Vas deferens H&E



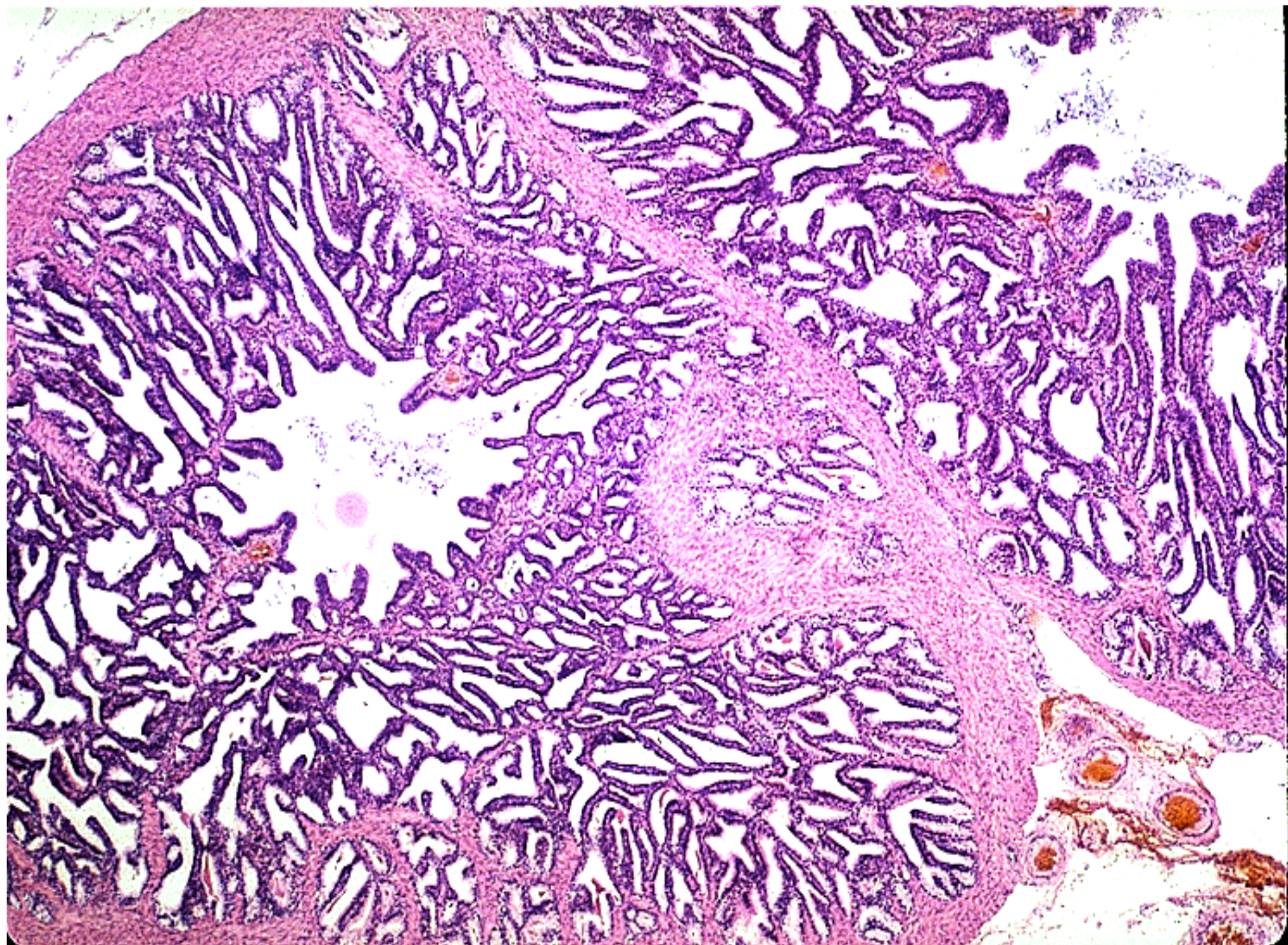


# Seminal Vesicle



Highly convoluted mucosal folds which further branch and anastomose to form irregular cavities or mucosal crypts (Honeycomb appearance)





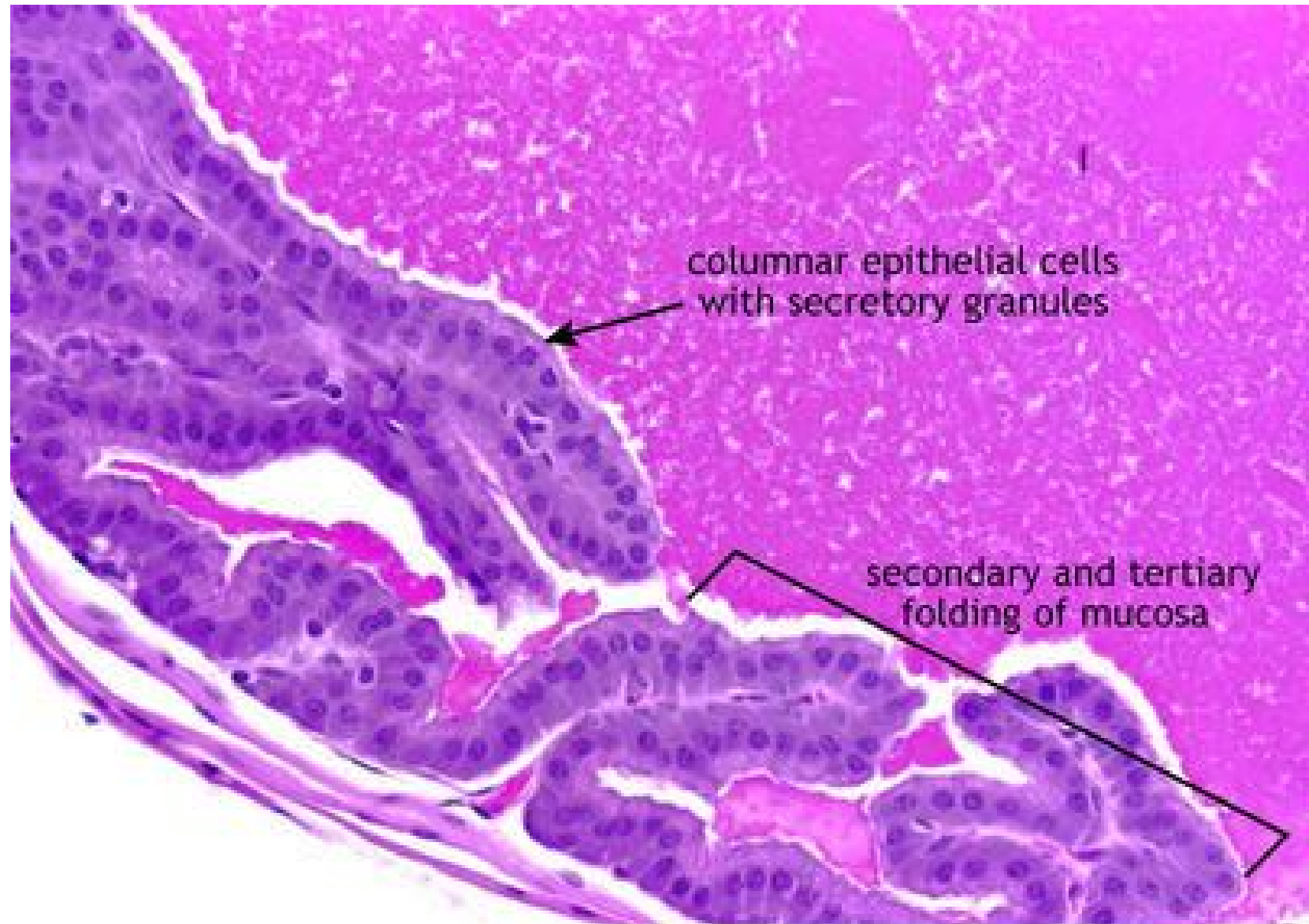


- **Mucosal** folds with  
Pseudostratified low  
Columnar,  
cuboidal  
**Muscle**

Inner -  
circular

Outer- longitudinal  
**Adventitia**

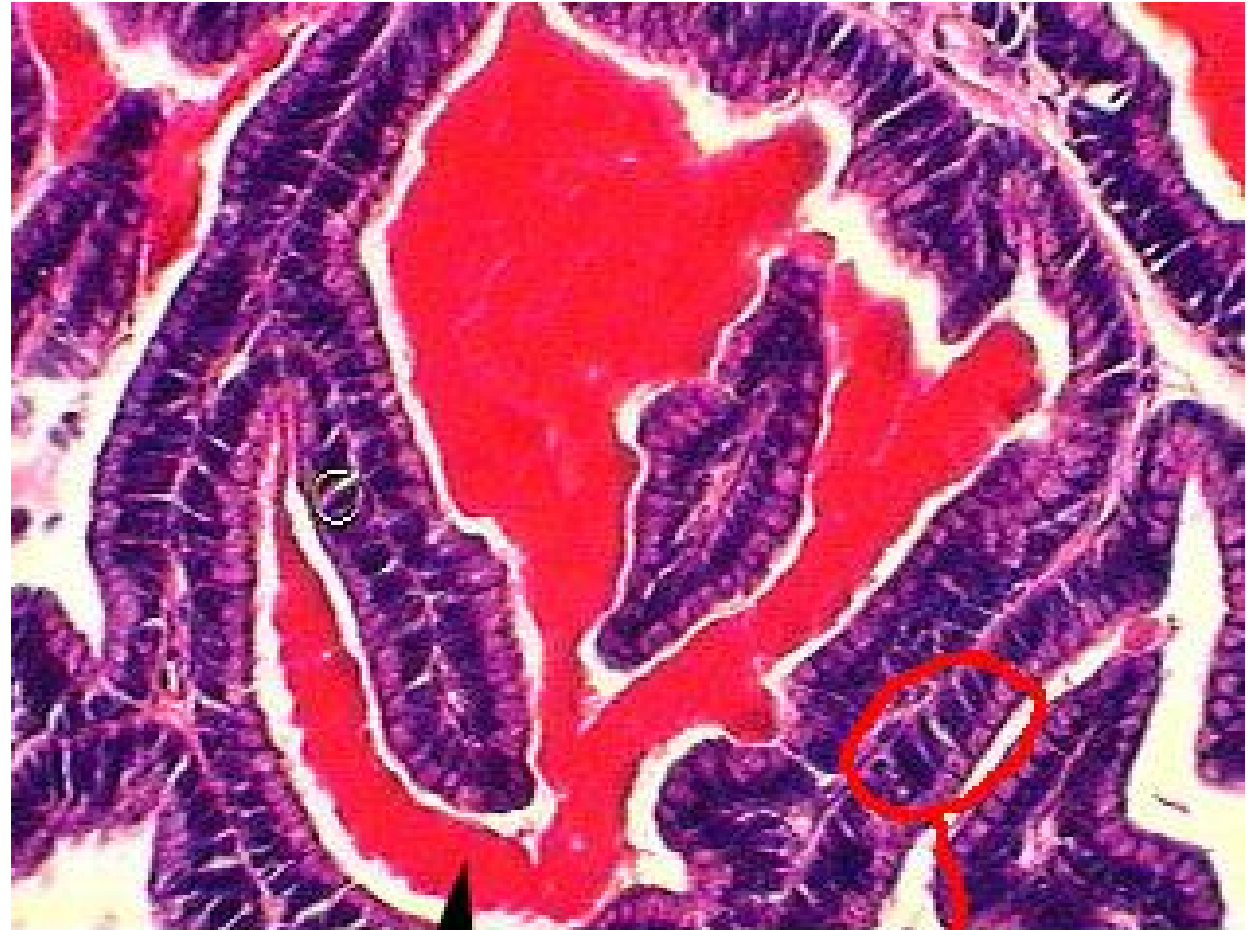






# Seminal vesicle

Secretion contains fructose which serves as a main energy component for the sperm motility

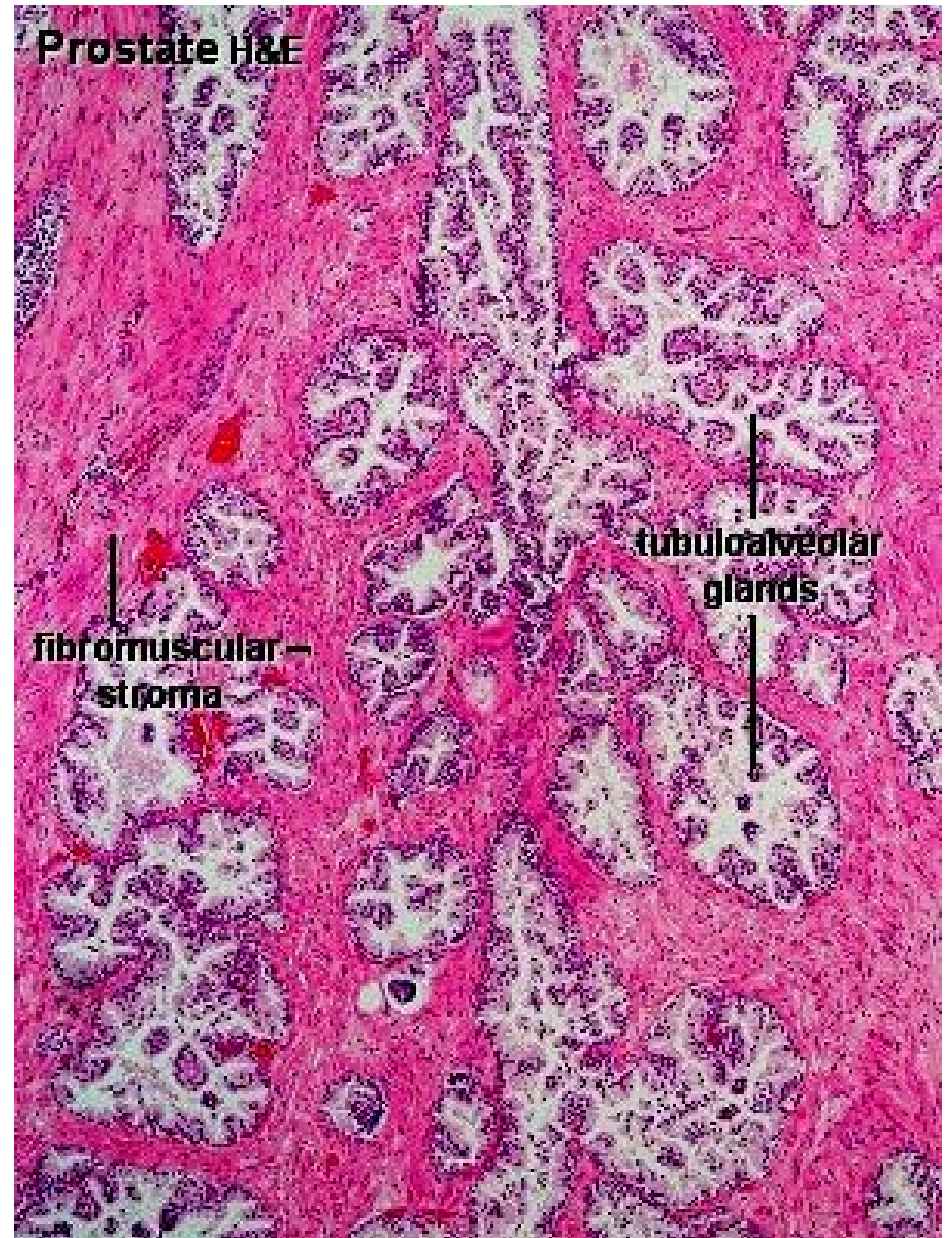


Fluid

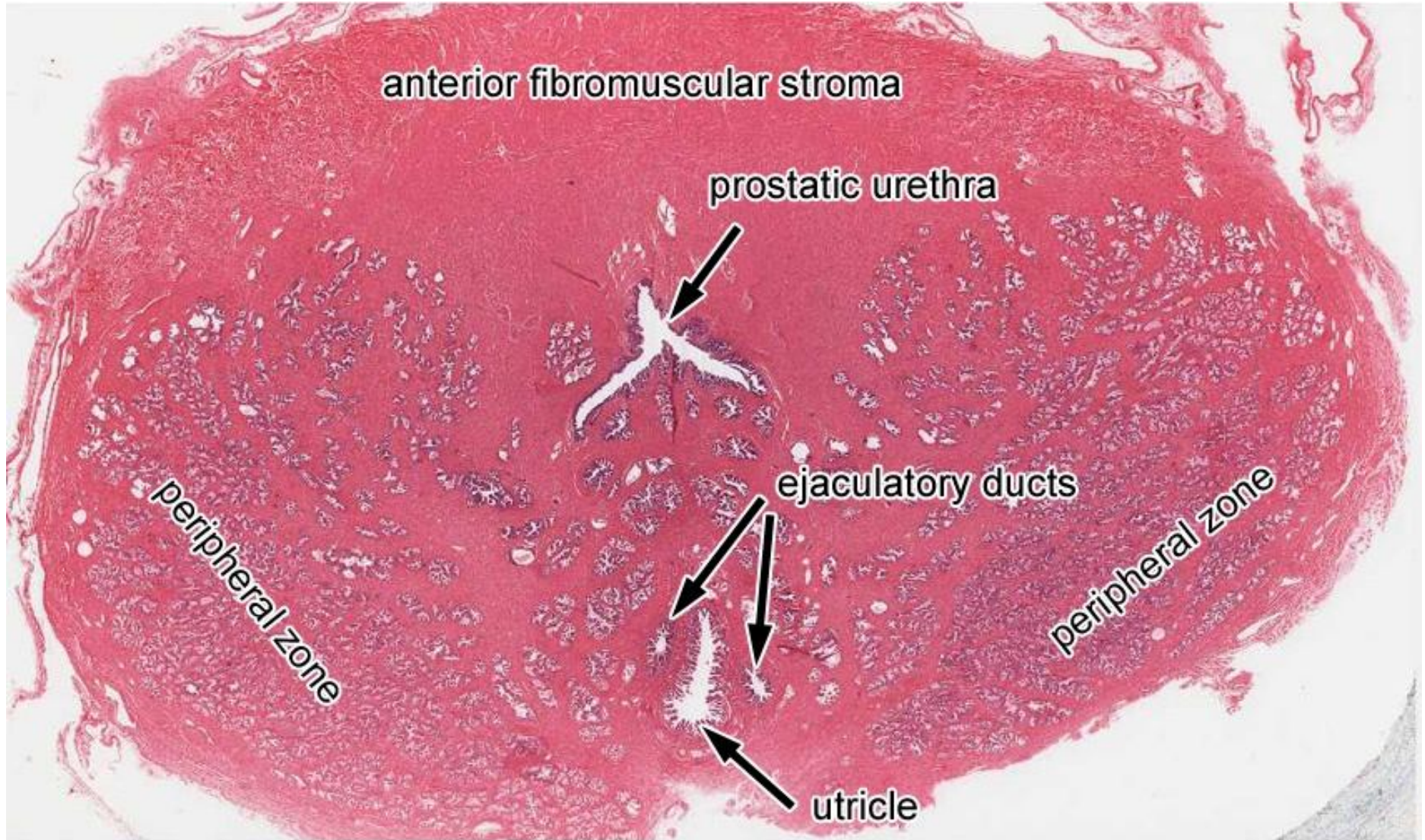
Columnar  
Epithelium

# Prostate

- **FIBROMUSCULAR GLANDULAR TISSUE**
- **Parenchyma**
  - **Tubulo alveolar glands**
  - **Alveolus**
    - Large irregular lumen
    - Lining epithelium  
simple columnar
  - **Prostatic concretions**
  - **Amyloid bodies** (corpora amylacea)

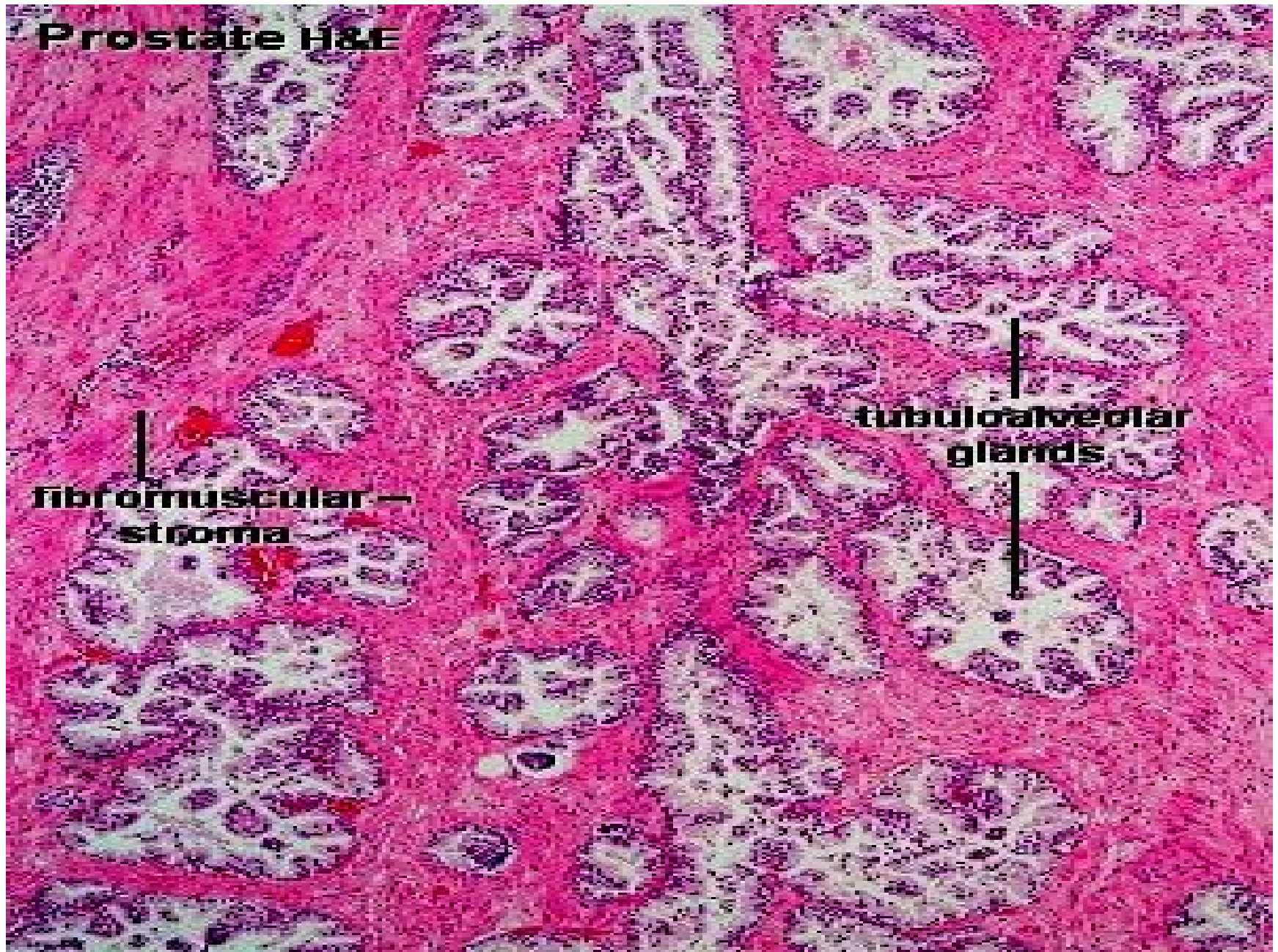


# Prostate



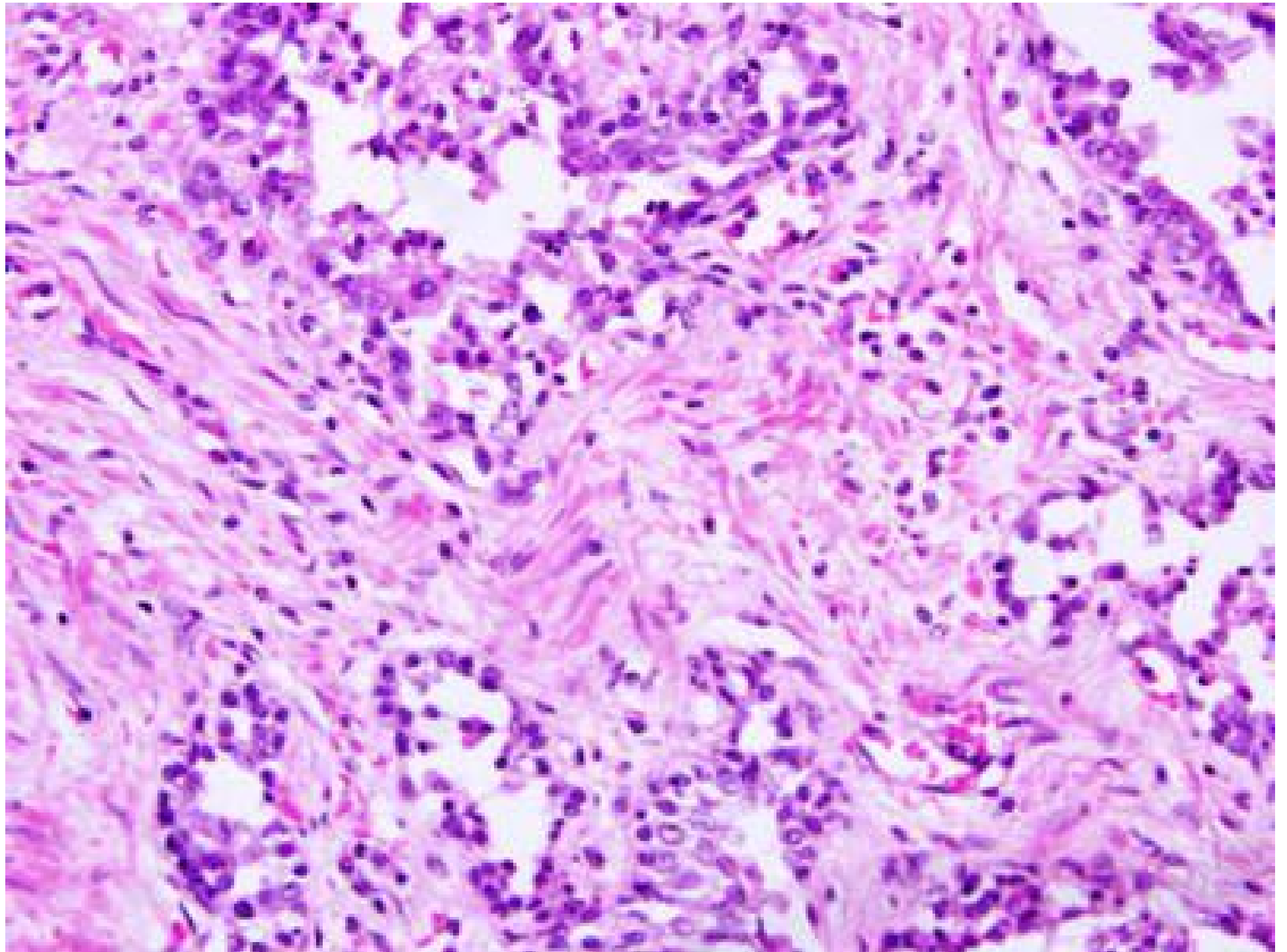


# Prostate H&E

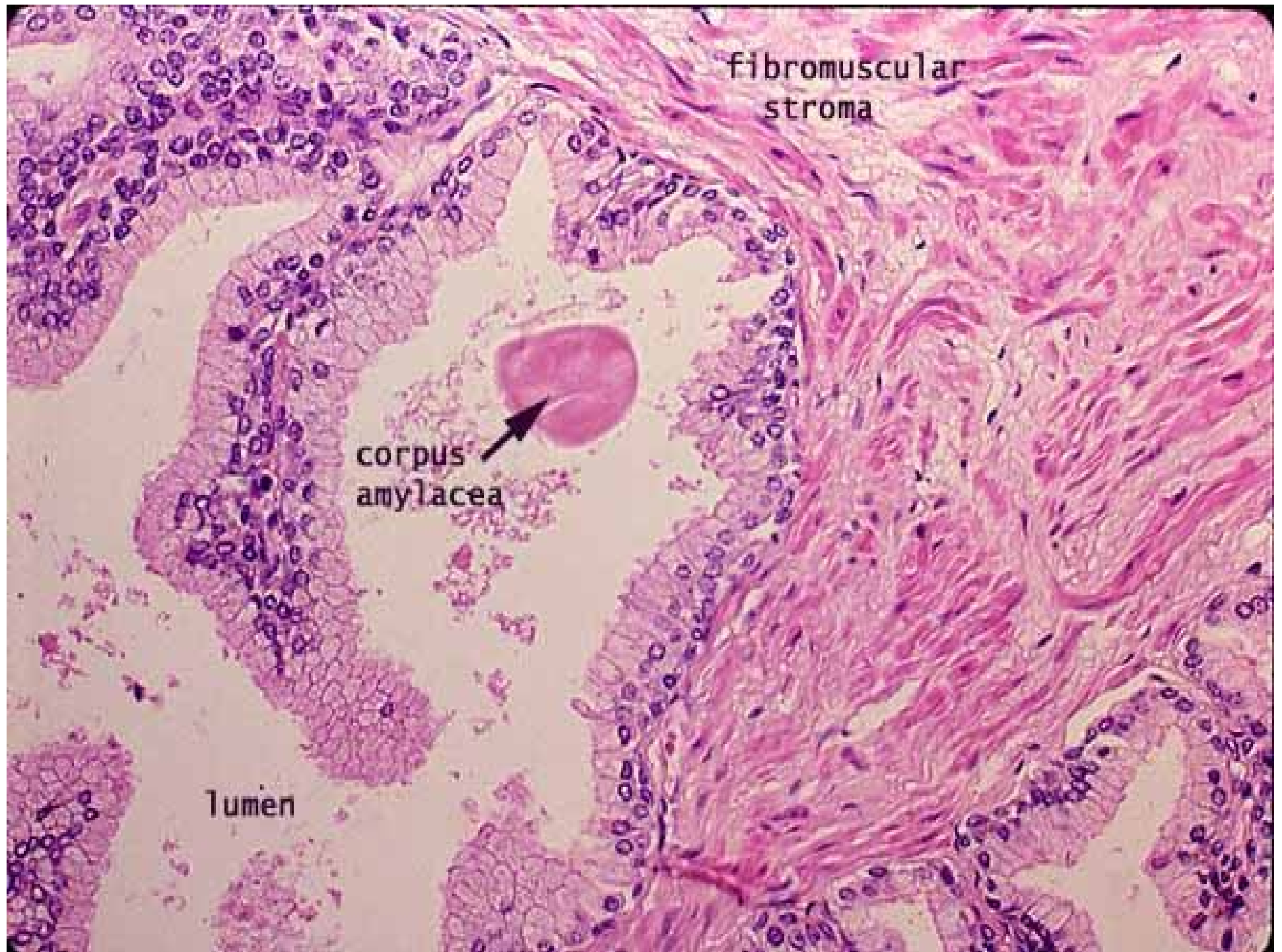


fibromuscular —  
stroma

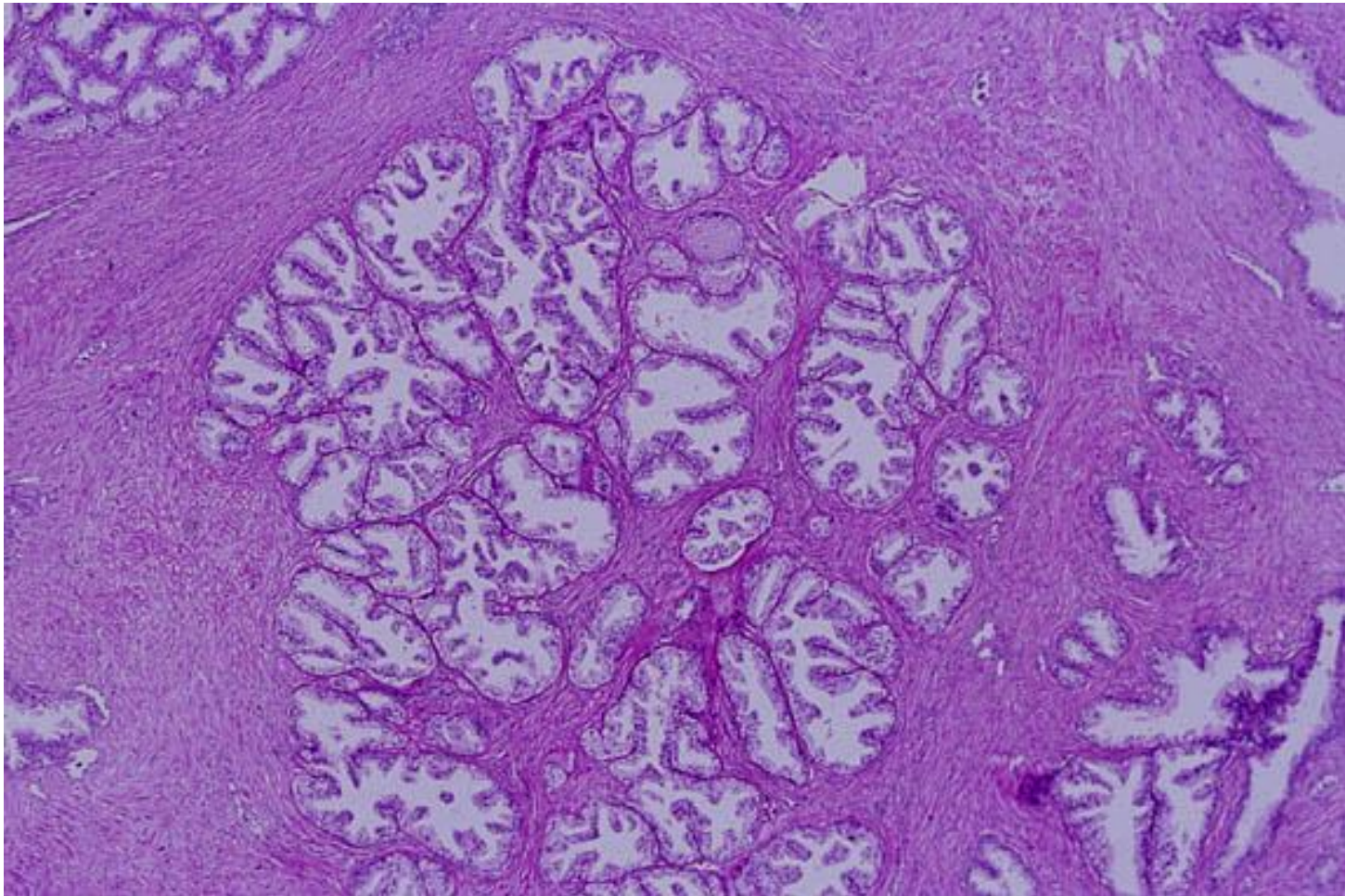
tubuloalveolar  
glands







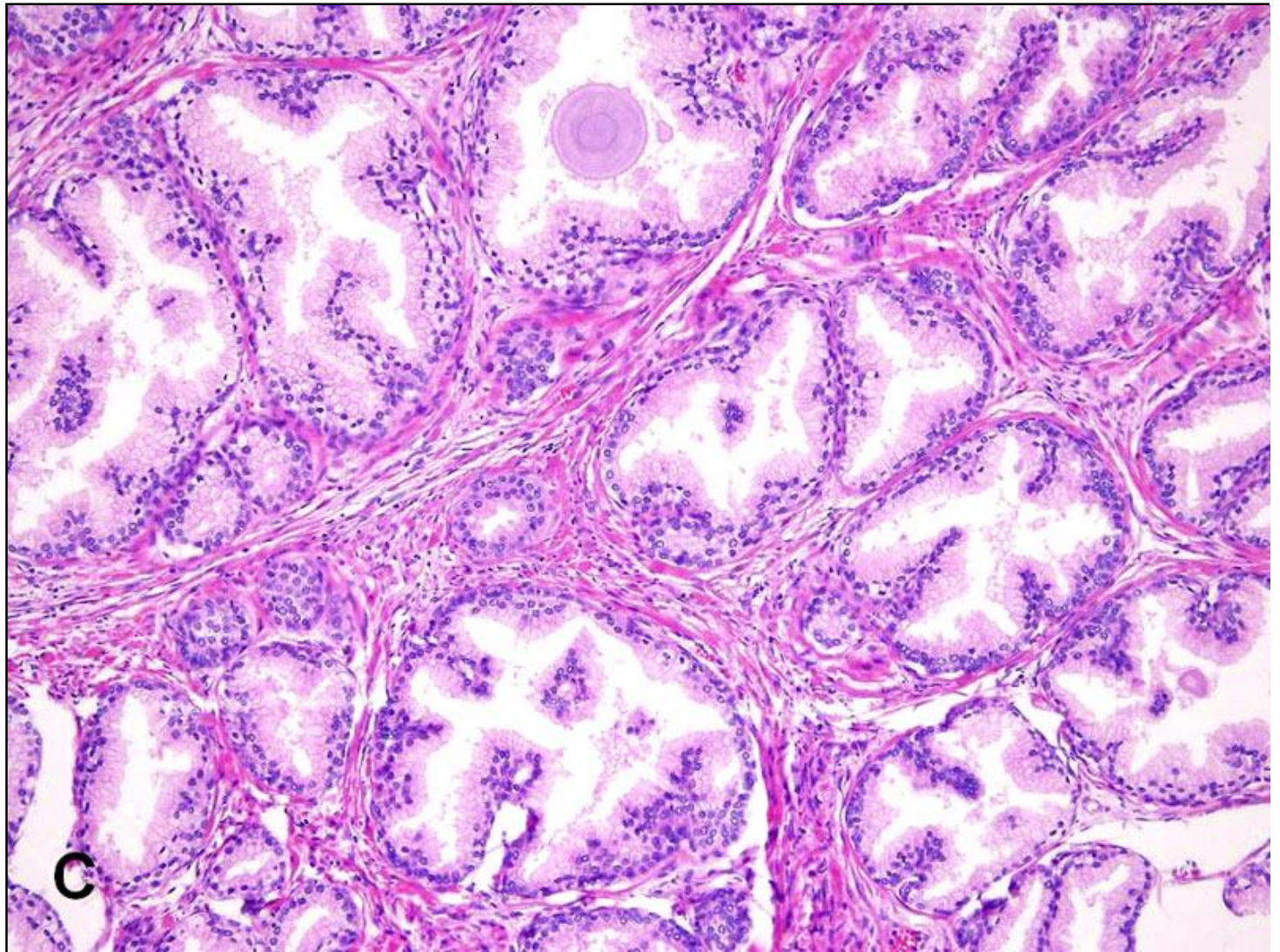
# Prostate





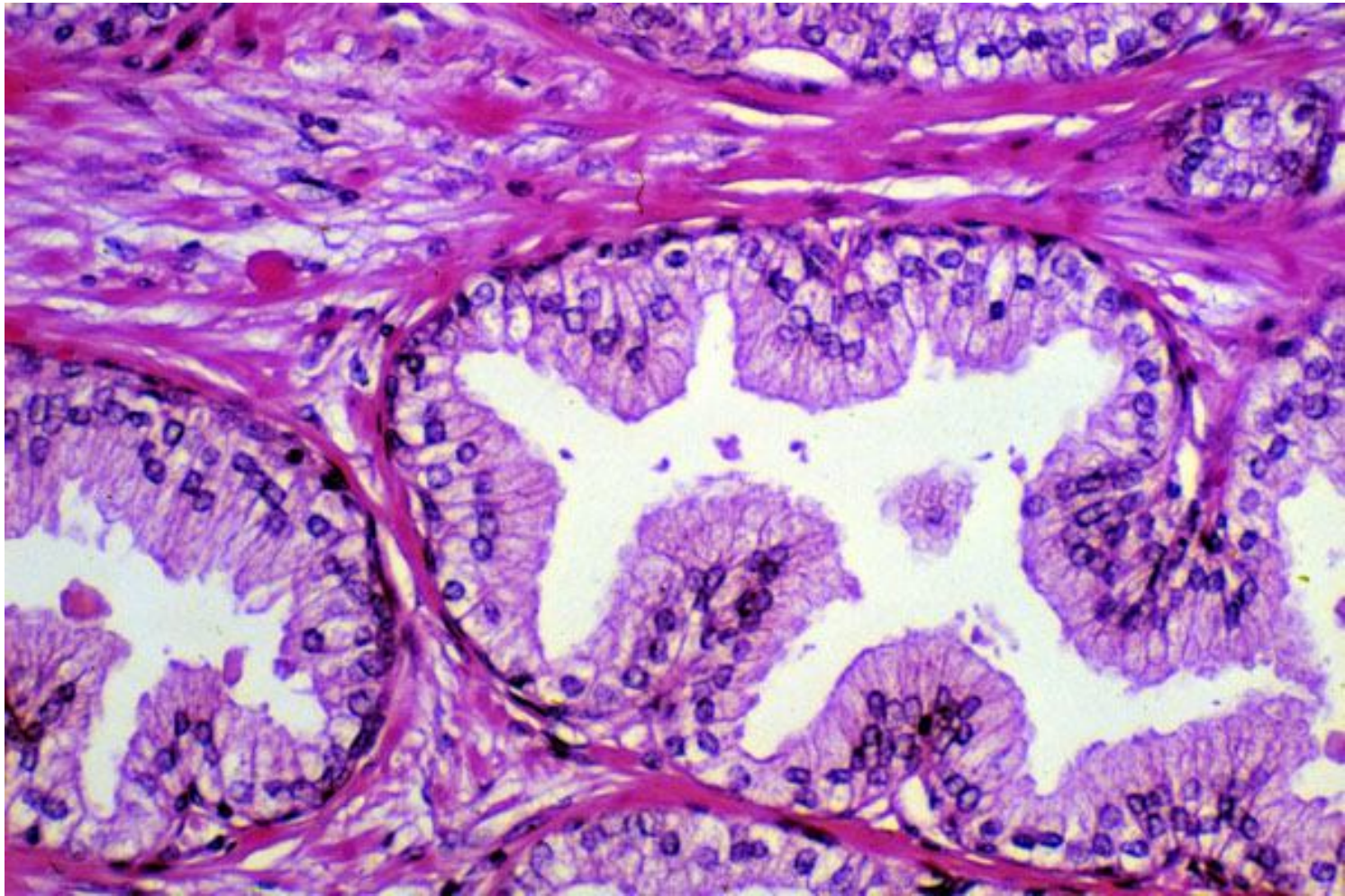
# Prostate

Epithelium  
varies  
from  
simple  
cuboidal  
to  
columnar  
to  
pseudostratified.





# Prostate



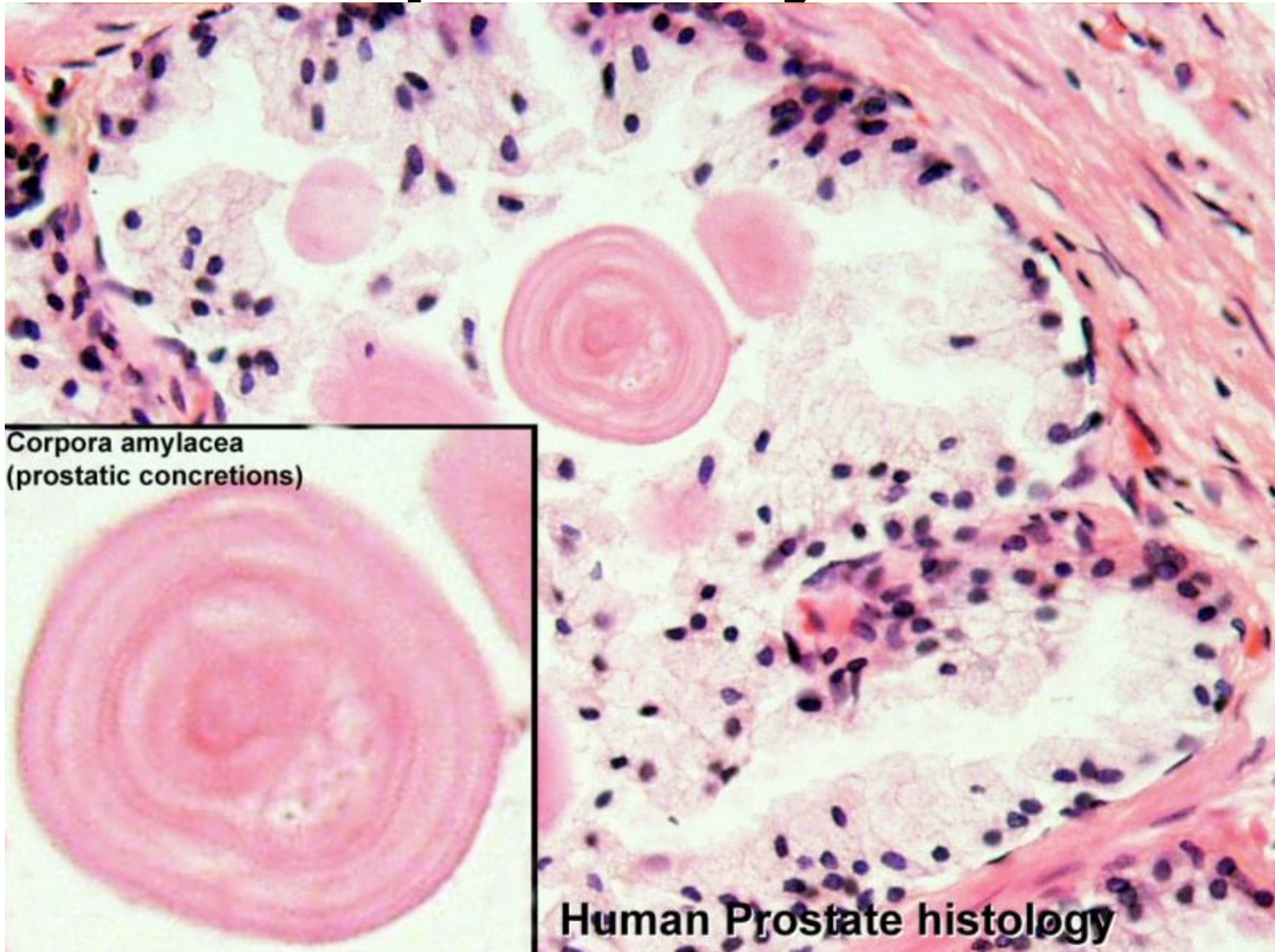


# Corpora amylacea- Prostatic concretions

**Dense  
characteristic  
bodies  
formed by  
the  
condensation  
of  
prostatic  
secretions**

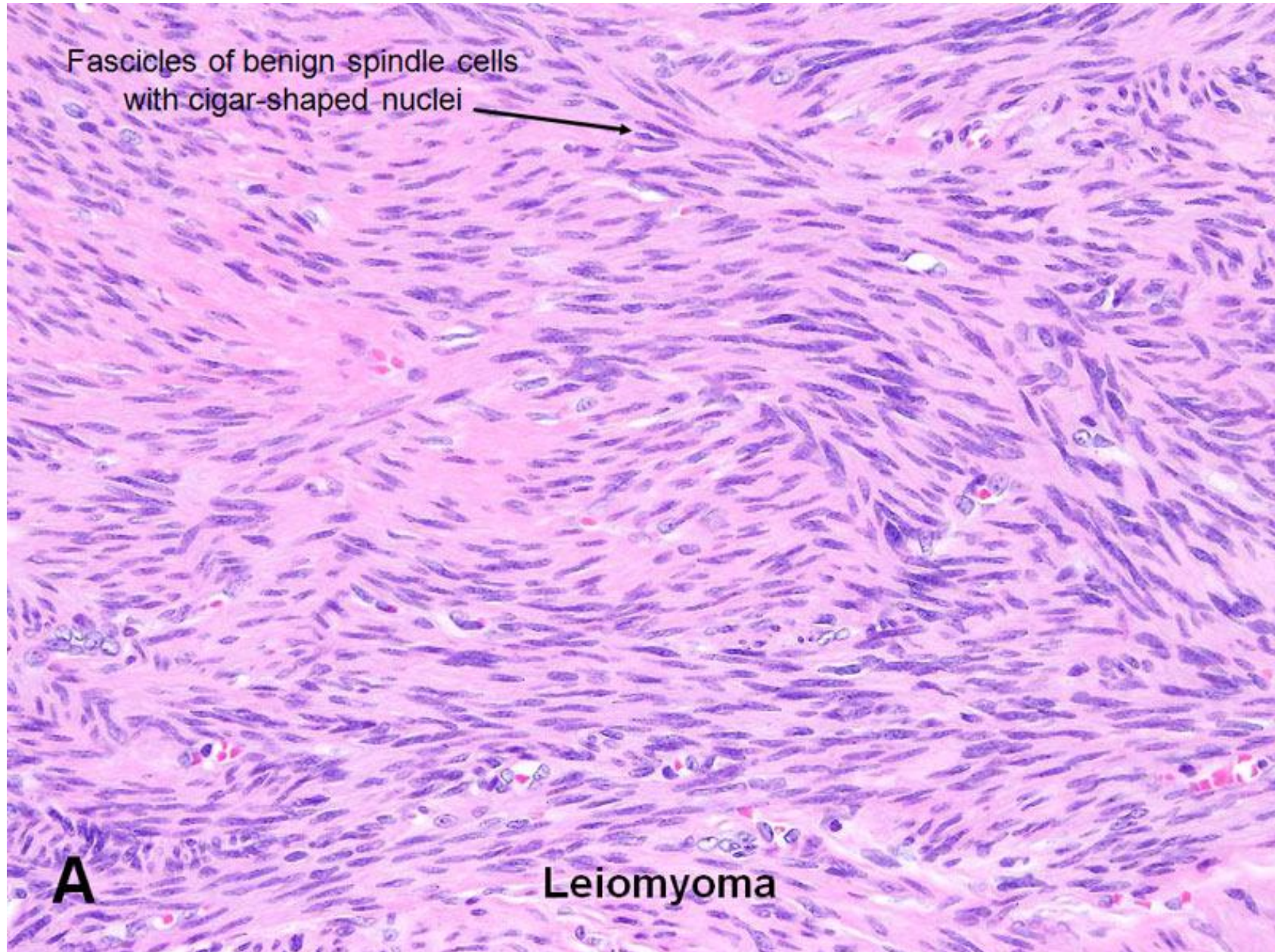


# Corpora Amylacea



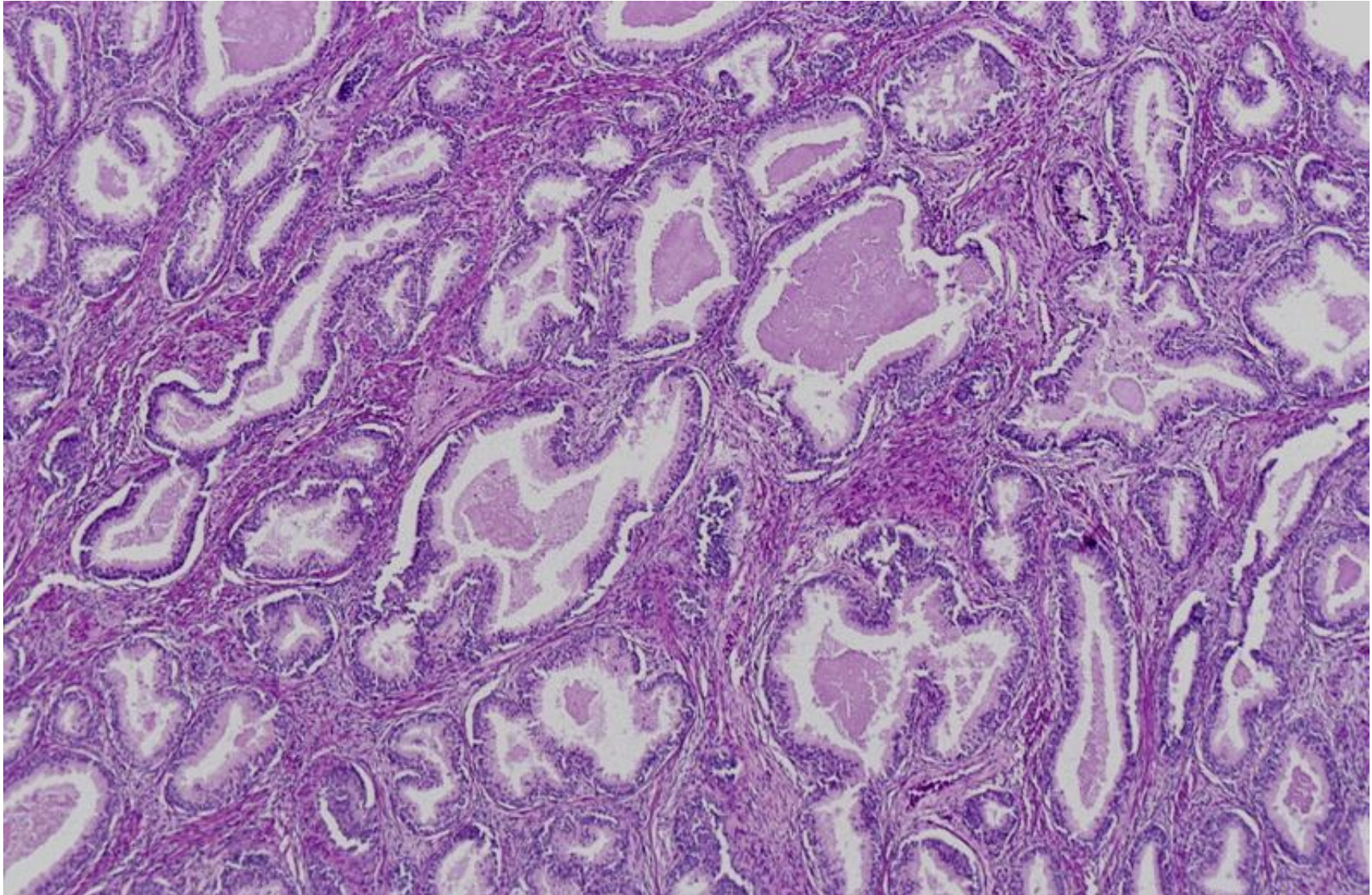


# Prostate





# Benign Prostatic Hyperplasia

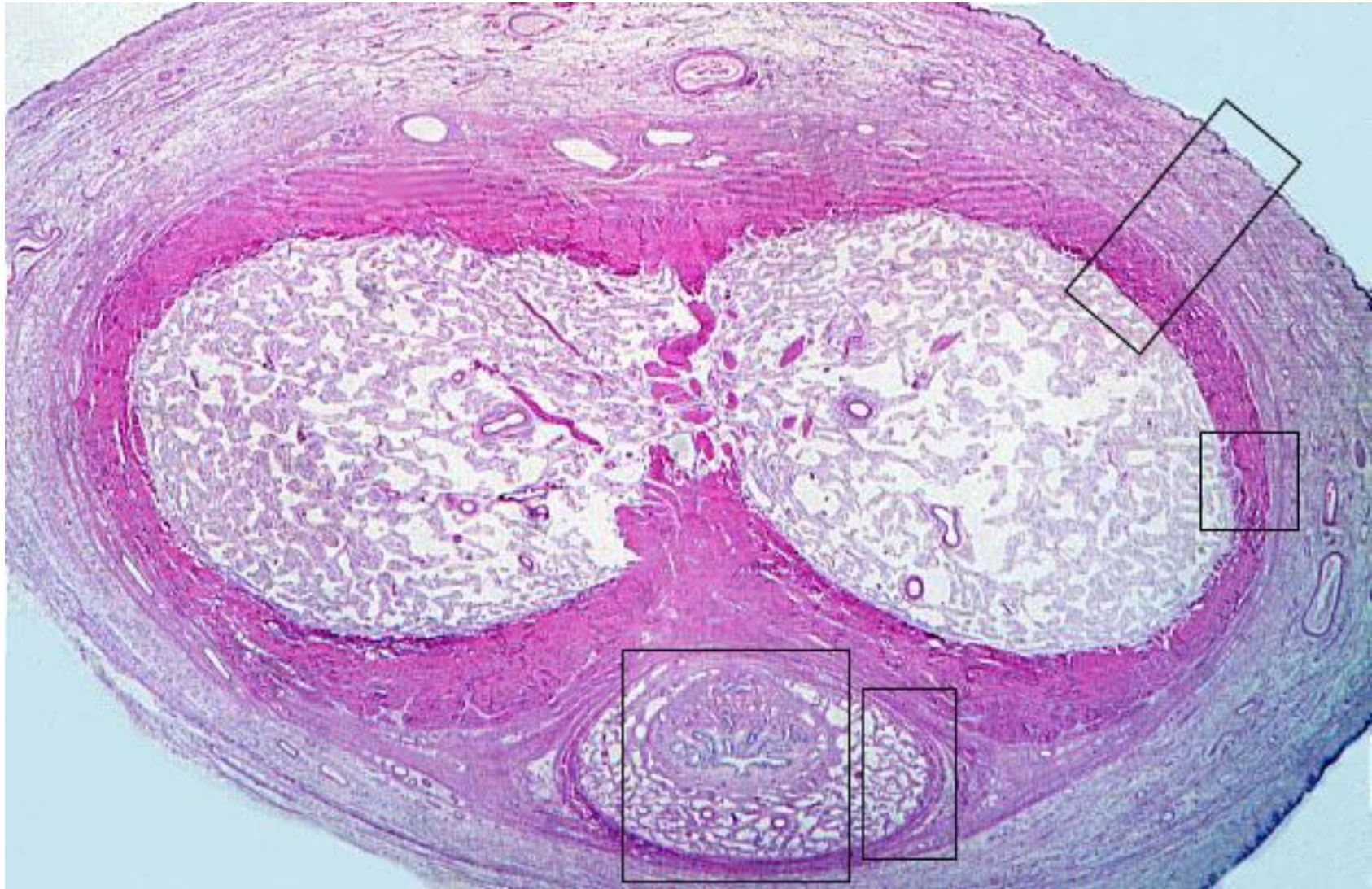




# Penis

- **Paired Corpora Cavernosa**
- **Single Corpus Spongiosum Traversed by penile urethra (lined by Stratified columnar epithelium)**
- **Covered by thick Tunica albuginea**

# Penis





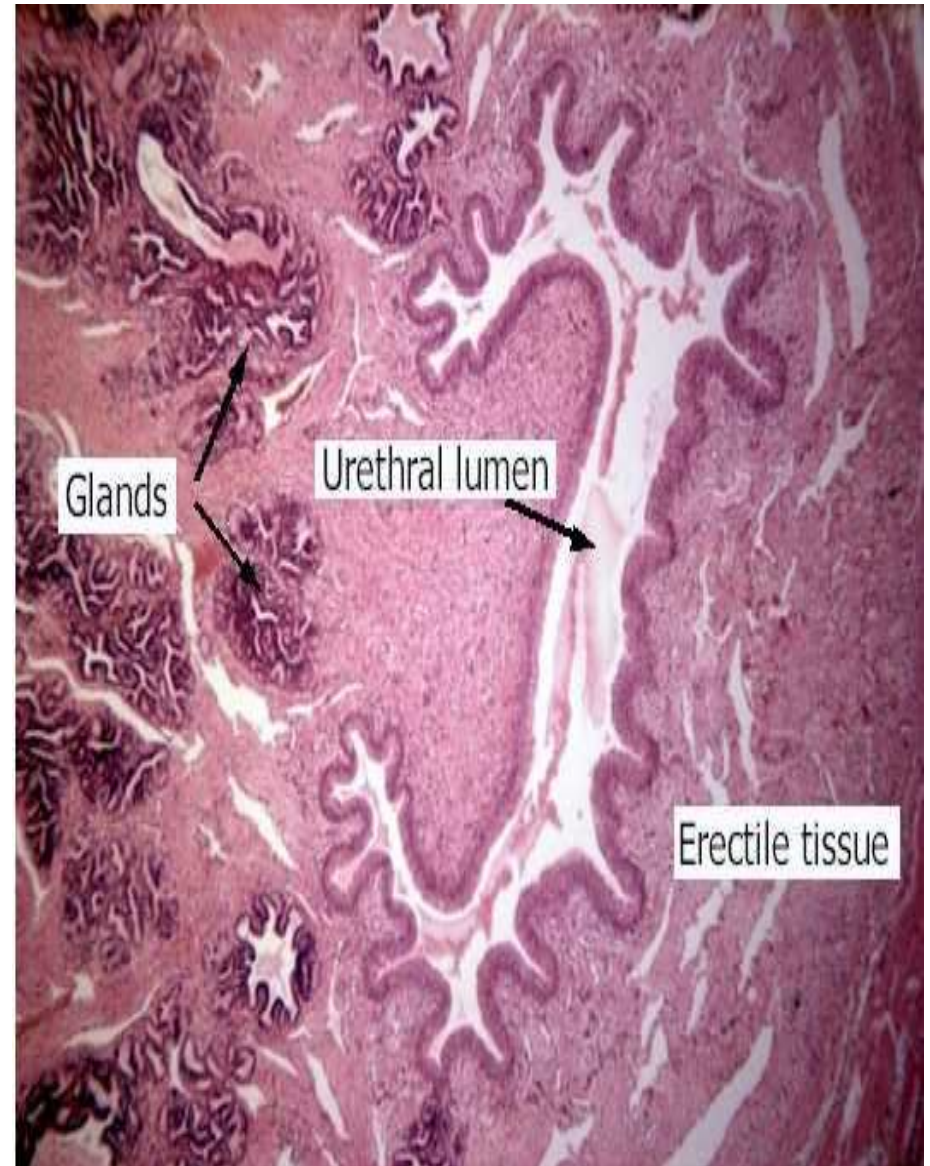
# Urethra

## Mucosa –Epithelium

- prostatic *Transitional epithelium*
- penile part& membranous part  
*pseudostratified or stratified columnar epithelium*
- terminal part  
*Stratified squamous epithelium*

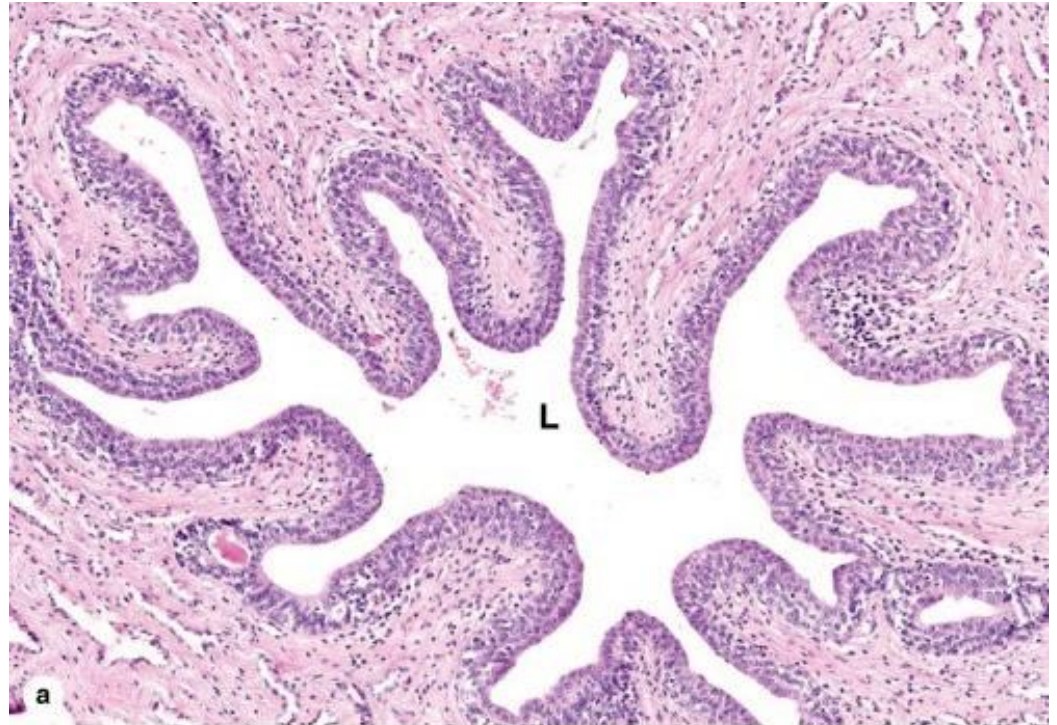
**Sub mucosa-** connective tissue  
urethral glands

**Muscle layer** –only in  
membranous part & prostatic  
part



# Prostatic urethra

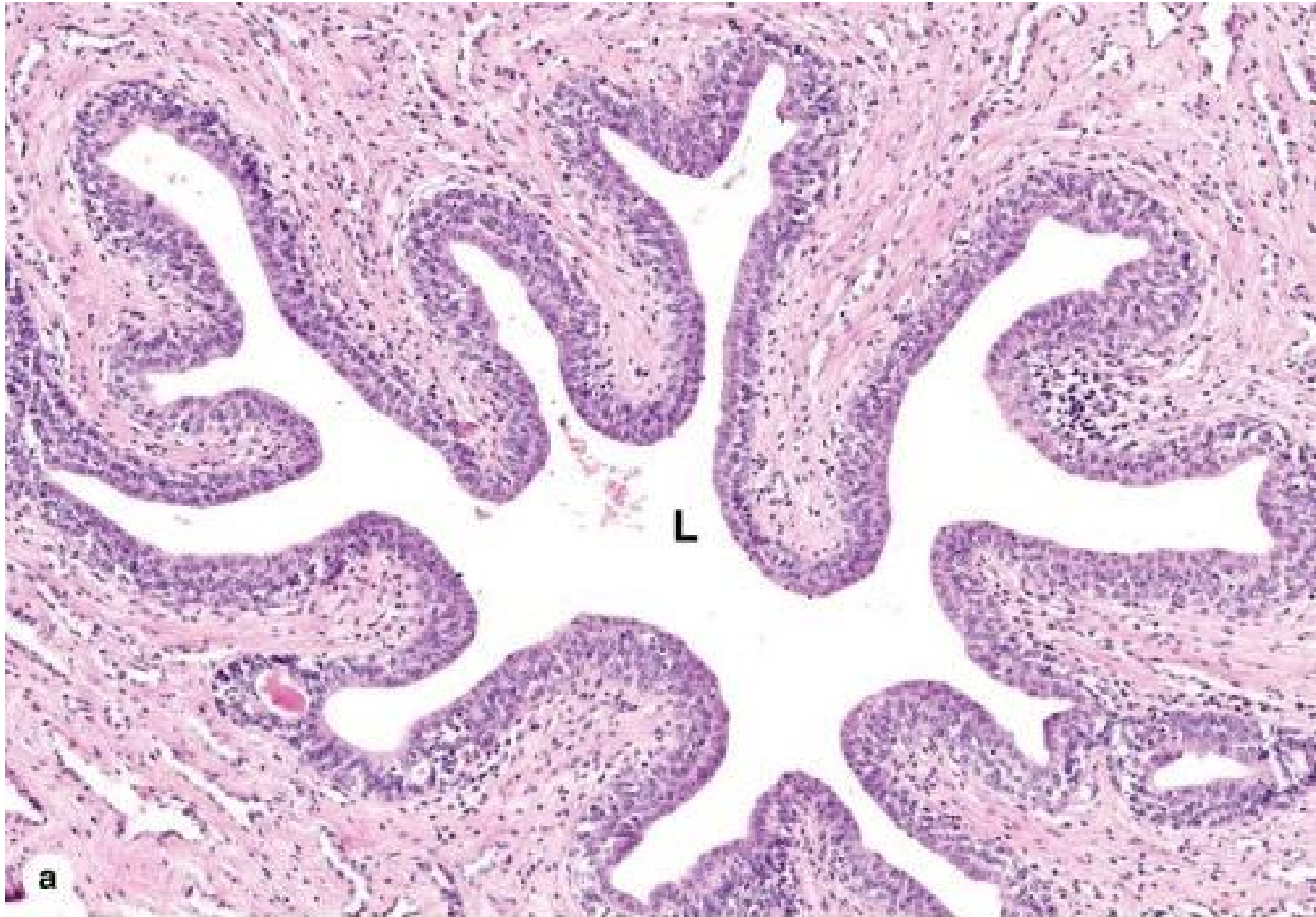
- Crescent shaped
- Various outpocketings seen
- Lined by transitional epithelium in upper part
- Lower part stratified columnar epithelium



Source: Mescher AL: *Junqueira's Basic Histology: Text and Atlas, 12th Edition*: <http://www.accessmedicine.com>

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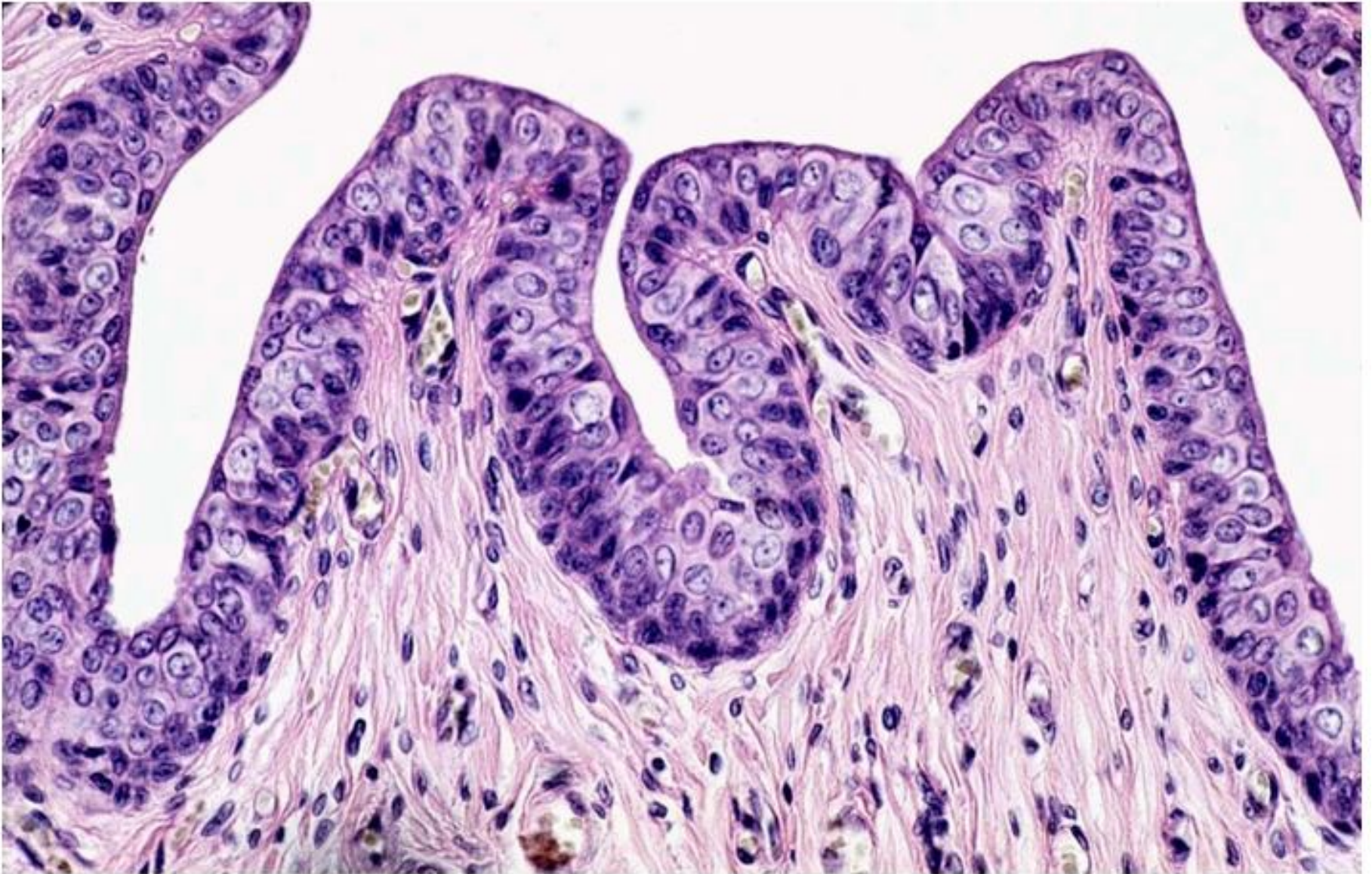




Source: Mescher AL: *Junqueira's Basic Histology: Text and Atlas*,  
12th Edition: <http://www.accessmedicine.com>

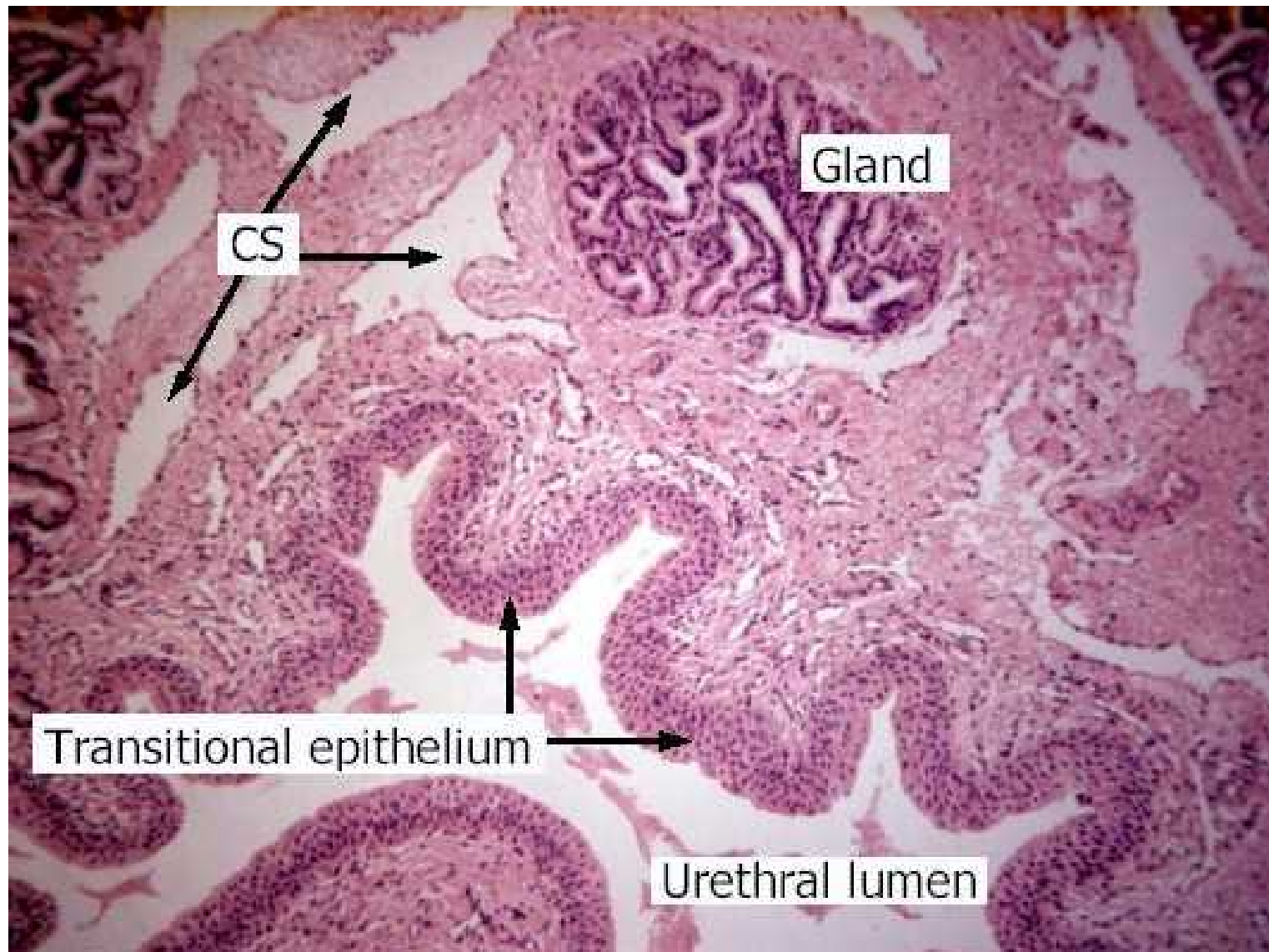
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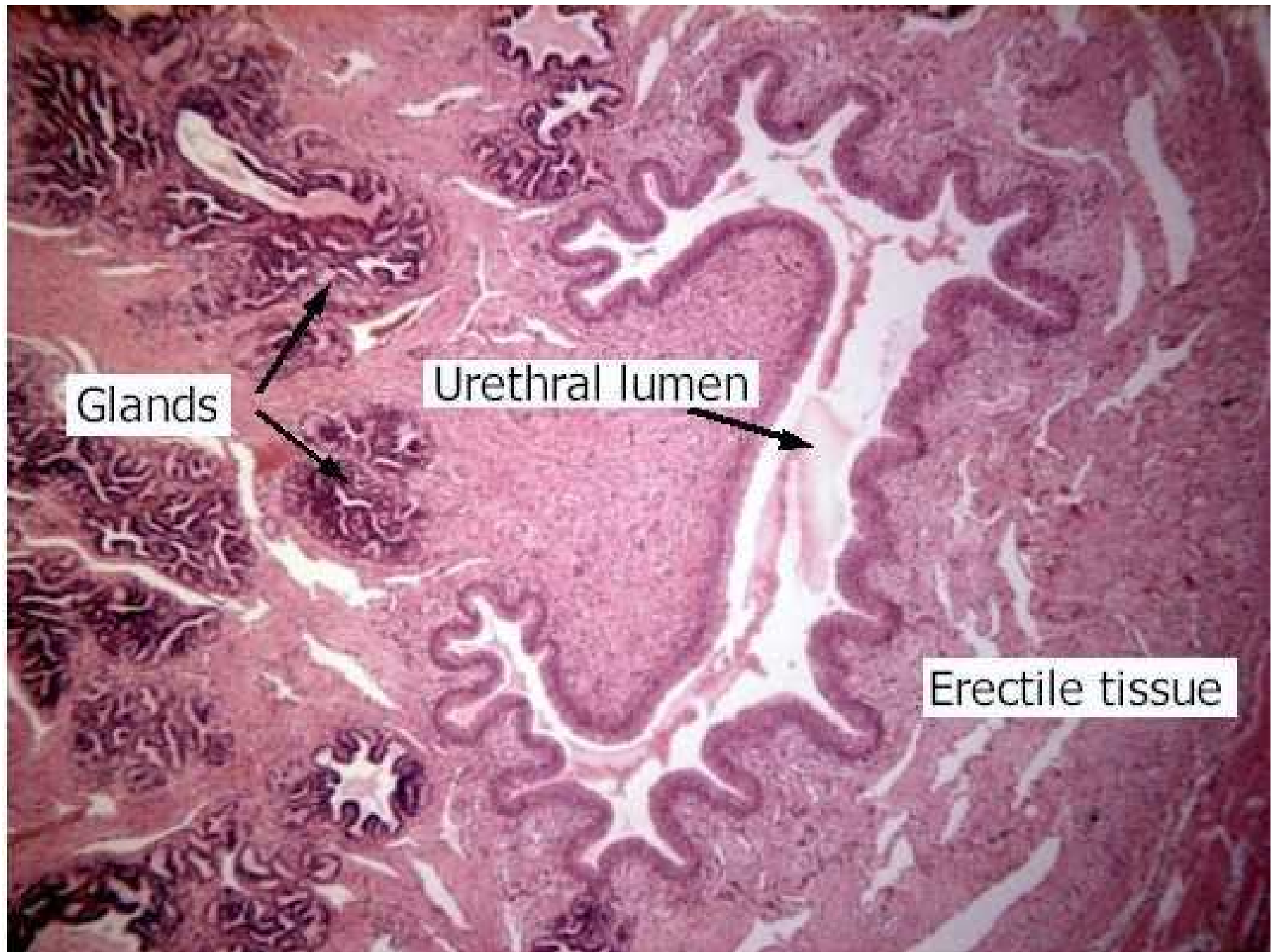
# Urethral Epithelium





# Male Urethra

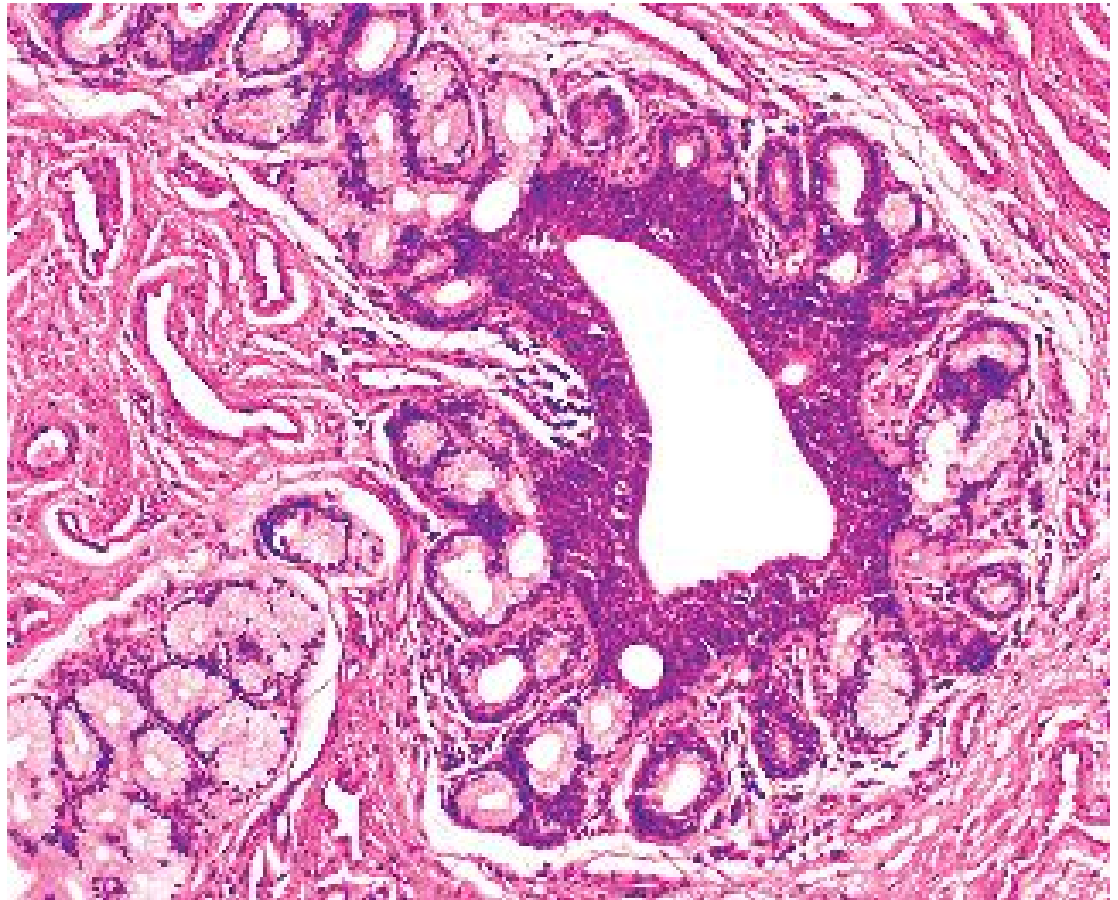






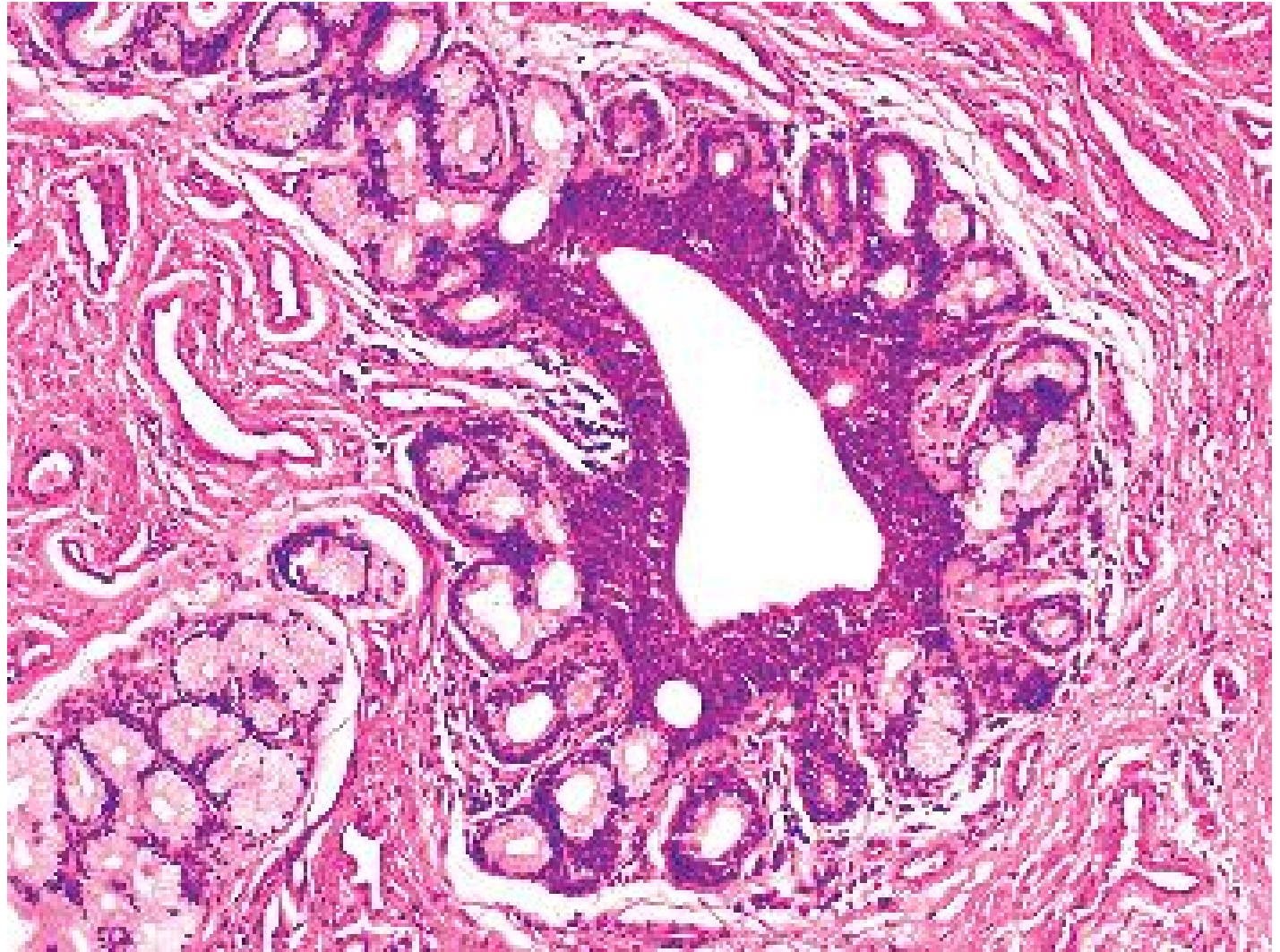
# Penile Urethra

- Irregular outline
- Outpocketings known as Sinus of Morgagni
- Lined by stratified columnar
- Glands of Littre- Paraurethral glands open into these outpocketings



# Penile Urethra

**External  
urethral  
meatus and  
navicular  
fossa are  
lined by  
Stratified  
squamous  
epithelium**





# MCQ

- **The epithelium lining the ductus epididymis is**
  - 1. Simple Columnar**
  - 2. Stratified Columnar**
  - 3. Transitional**
  - 4. Pseudostratified Columnar**

# MCQ

- **Corpora amylacea are present in which of the following organs?**
  - 1. Pineal Gland**
  - 2. Ovary**
  - 3. Prostate**
  - 4. Seminal Vesicle**



# MCQ

- **Specialised endocrine cells with acidophilic cytoplasm, lying in the interstitial tissue of testis are named as**
  - 1. Myoid cells**
  - 2. Sertoli cells**
  - 3. Leydig cells**
  - 4. Spermatogonia**

# MCQ

- **Prostate is a**
  - 1. Glandular tissue**
  - 2. Fibromuscular organ**
  - 3. Fibromuscular glandular tissue**
  - 4. Connective tissue organ**