RAMA UNIVERSITY

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FACULTY OF NURSING

Chapter-07

RAMA UNIVERSITY

MALE REPRODUCTIVE SYSTEM

- Organs
- Functions
- Pathway of Sperm Cells

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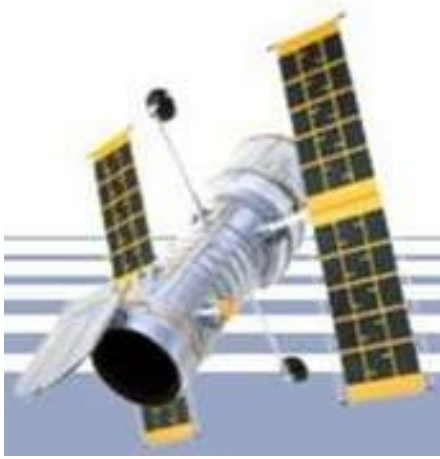
LECTURER (MSN)

OBJECTIVES

1. Identify the structures and major organs of the male reproductive system and describe their functions.
2. Trace the pathway of the sperm cells in the organ system.



What is the
MALE REPRODUCTIVE SYSTEM?

Male Reproductive System

- Consists of a number sex organs that are a part of the human reproductive process.

- Produces, stores and releases the male gametes, or sperm.

. ***gametes***- a sex cell

MALE REPRODUCTIVE ORGANS

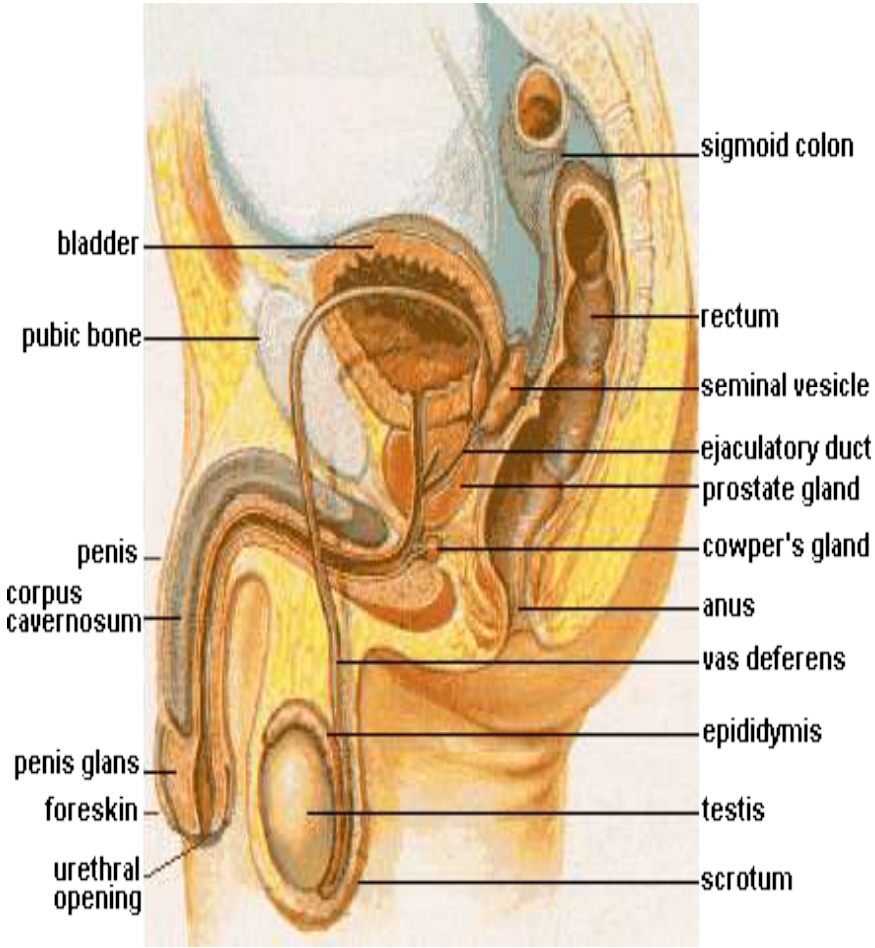
External Genital Organs

- Internal Genital Organs

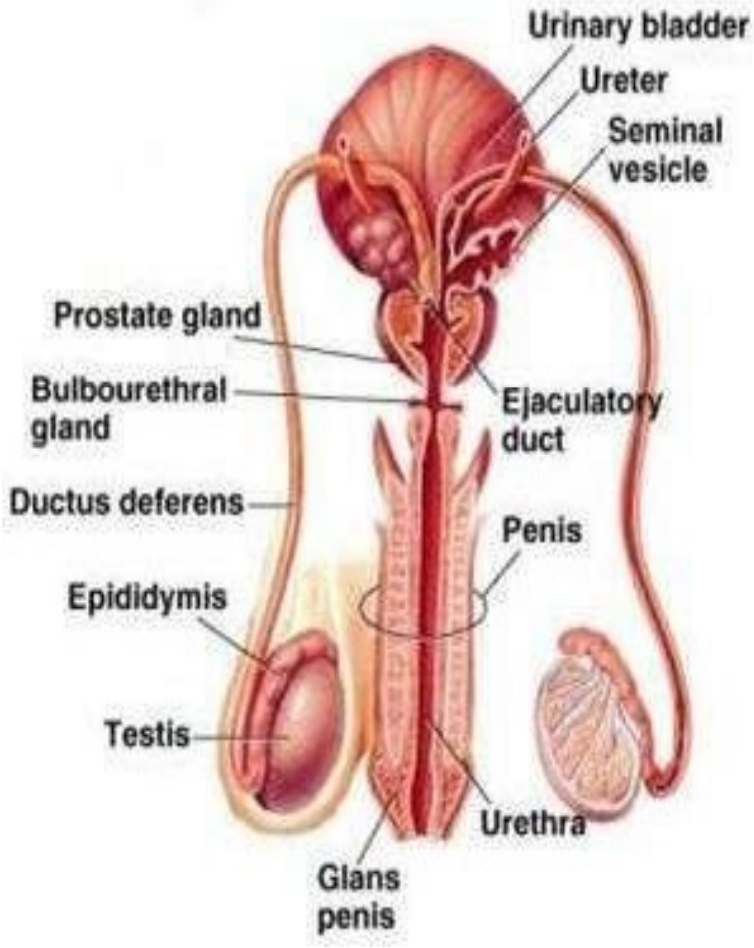
1. Testis
2. Epididymis
3. Vas Deferens
4. Accessory Glands
   a. Seminal Vesicles
   b. Prostate Gland
   c. Bulbourethral Glands

Internal Genital Organs

MALE REPRODUCTIVE ORGANS



Side view



Front view

External Genital Organs

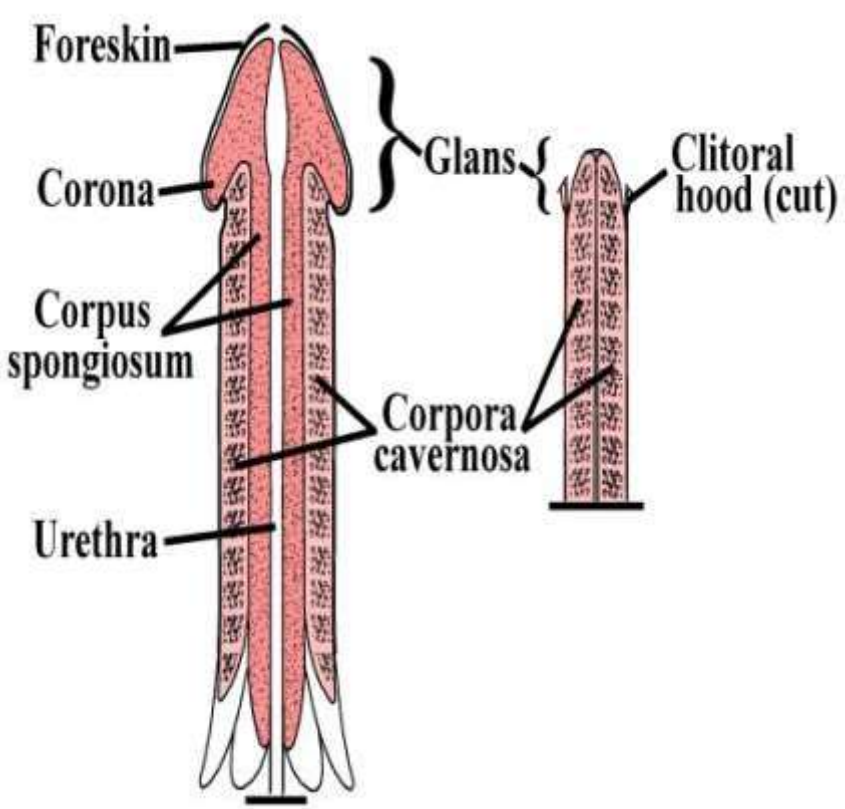
Penis

Scrotum

Penis

The **penis** is the organ by which the sperm is introduced into the female.

It contains spongy tissue that becomes turgid and erect when filled with blood.



Cont.
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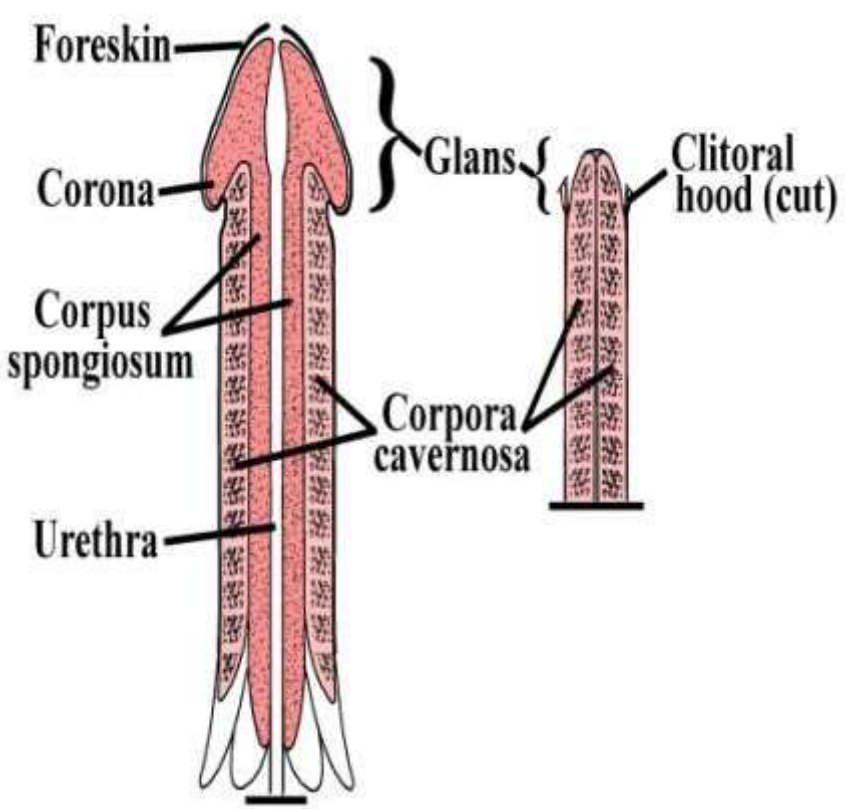
- **Erectile Tissues**
  - ***Corpus spongiosum*** – is the mass of spongy tissue which surrounds urethra and involves in erection by allowing rushing of blood into it
  - ***Corpus cavernosa*** – is one of a pair of songe-like regions of erectile tissue which contains most of the blood in the penis during penile erection



Cont.
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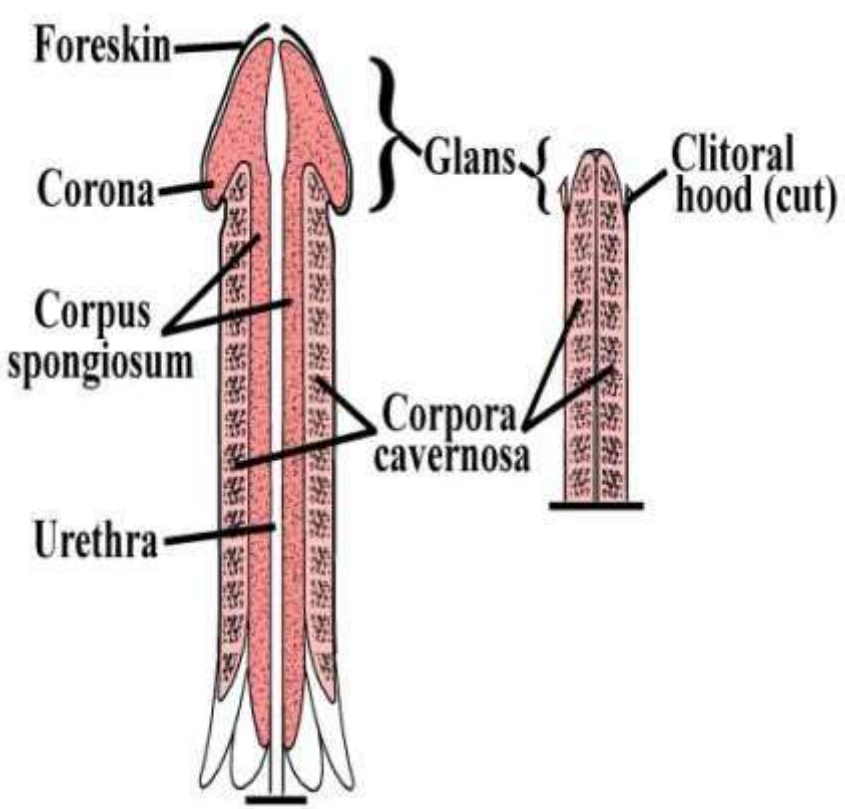
- **Urethra** – a tube within the penis that conveys semen out of the body during ejaculation.

- **Glans** – the rounded, highly sensitive head of the penis.

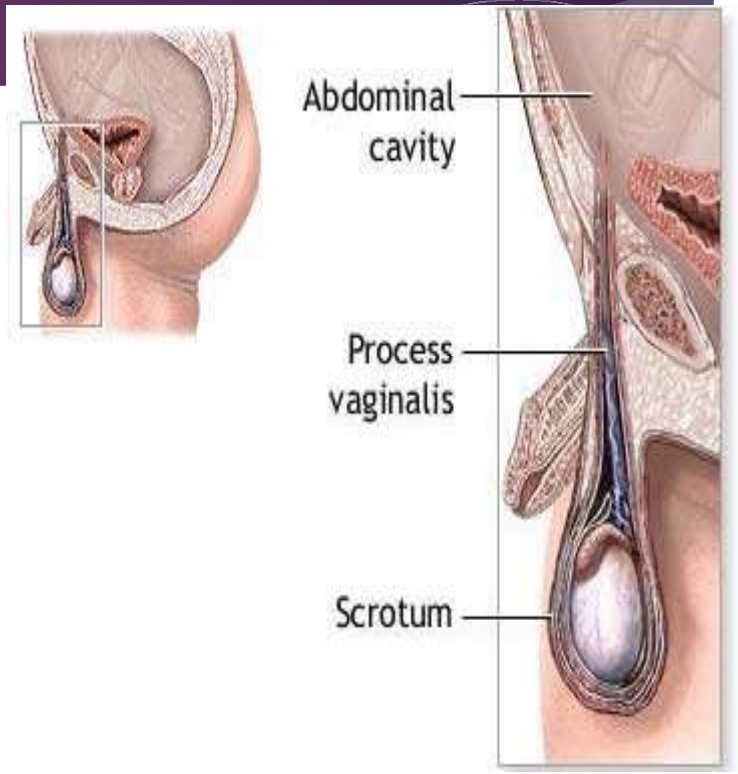
- **Prepuce** – a fold of skin, covering the head of the penis.



Scrotum

A pouch of skin formed from the lower part of the abdominal wall.

The **scrotum** keeps the testes at a temperature slightly cooler than body temperature.

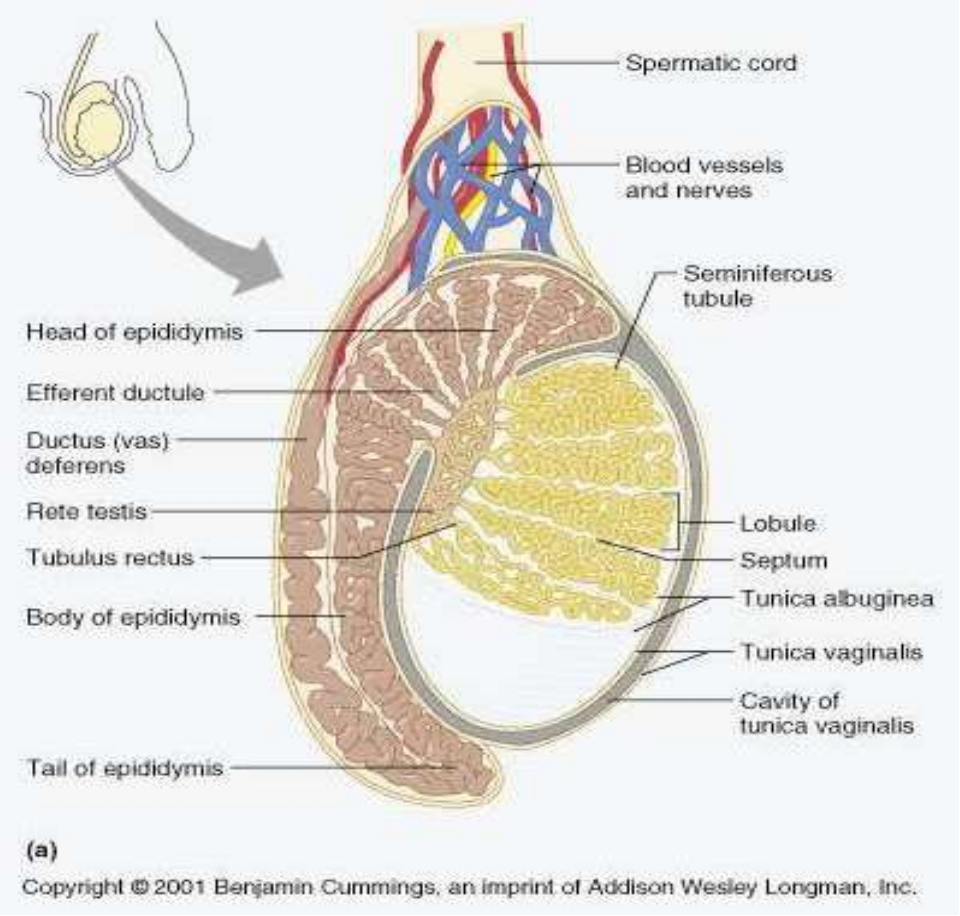


Internal Genital Organs

- Testis
- Epididymis
- Vas Deferens
- Seminal Vesicles
- Prostate Gland
- Bulbourethral Glands

Testis *(plural* testes*)*

The testes are the two-oval shaped male organs that produce sperm and hormone testosterone.

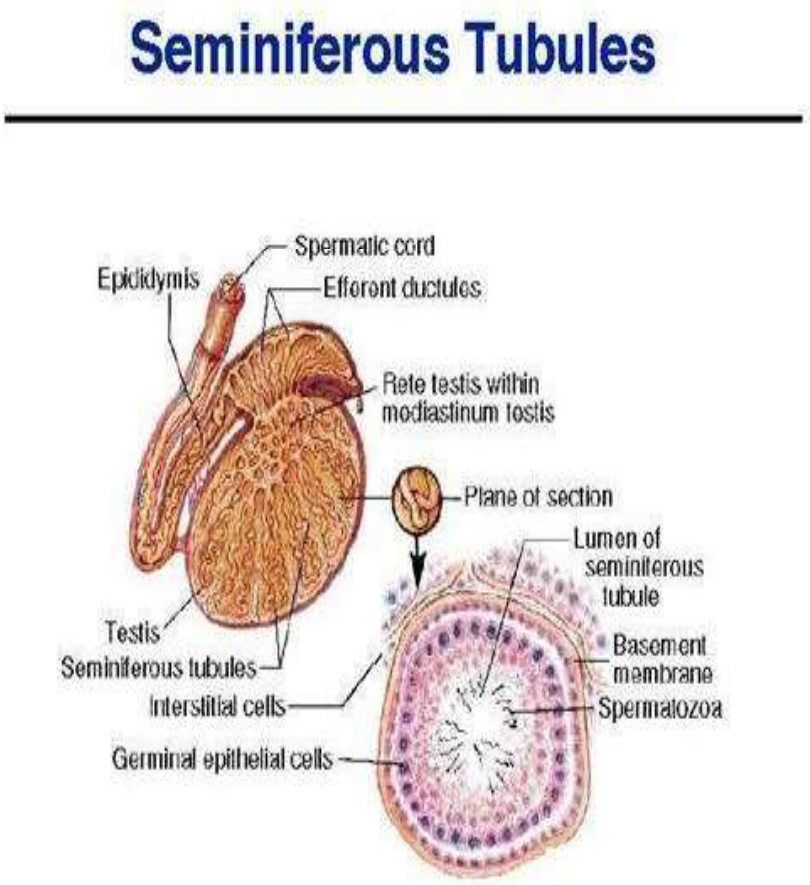


*****Testosterone***- the primary male sex hormone

Cont…

Each testis is made of tightly coiled structures called ***seminiferous tubules.***

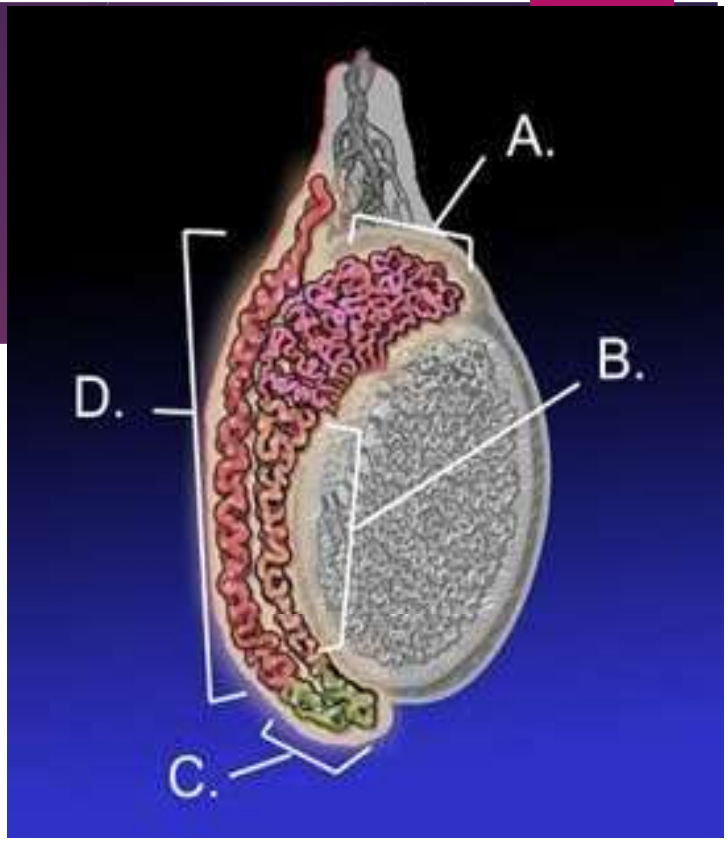
Among tubules are cells that produce testosterone.



Epididymis

The epididymis is a tightly coiled tubes against the testicles.

It acts as maturation and storage place for sperm.

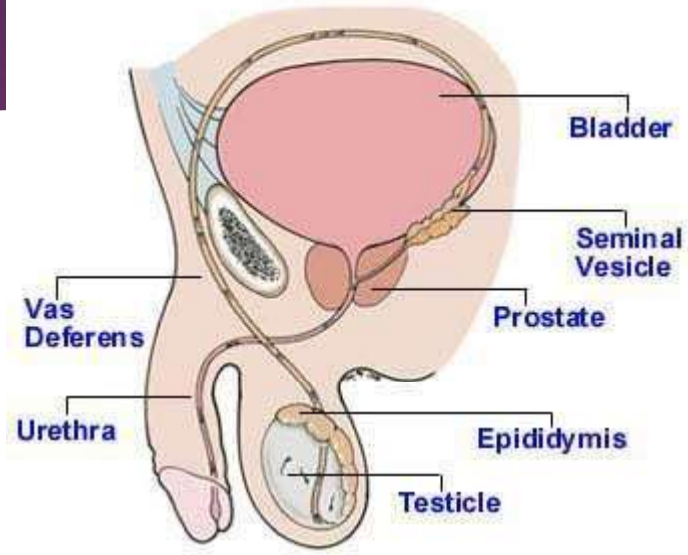


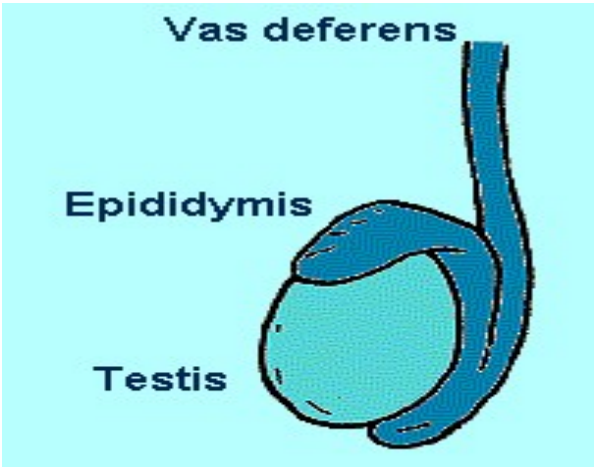
Adult human testicle with epididymis:
A. Head of epididymis,
B. Body of epididymis,
C. Tail of epididymis, and
D. Vas deferens

Vas Deferens (Ductus Deferens)

The vas deferens is a thin tube that starts from the epididymis to the urethra in the penis.

They transport sperm from the epididymis in anticipation of ejaculation.





Accessory glands

a. **Seminal Vesicles**

b. **Prostate Gland**

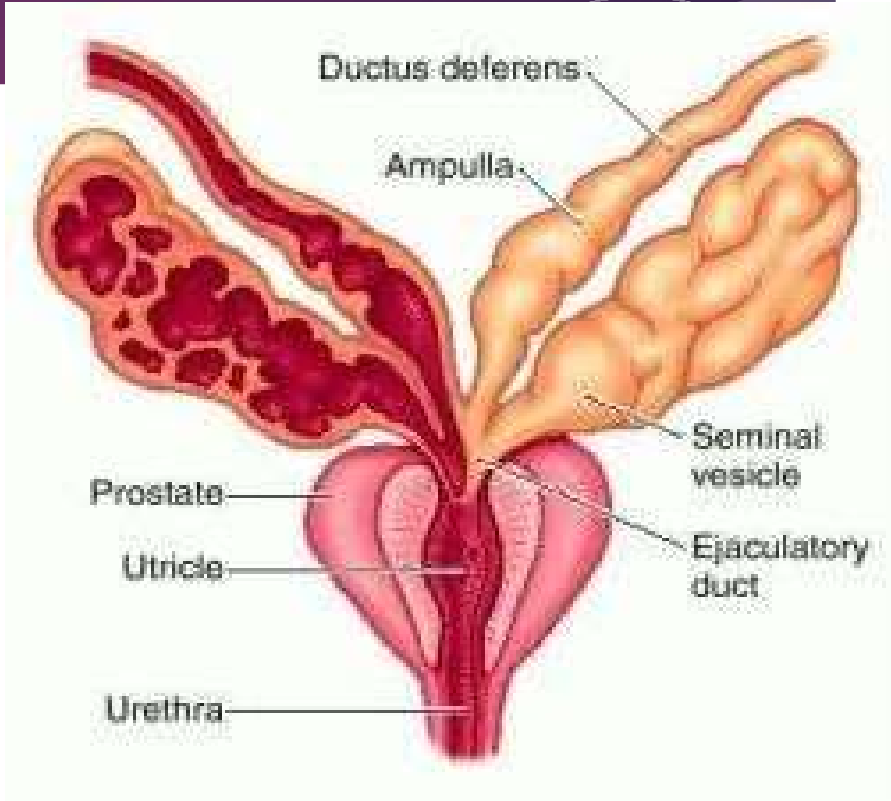
c. **Bulbourethral Glands**

These glands produce nourishing fluids for the sperms that enter the urethra.

Seminal Vesicles

The Seminal Vesicles are sac-like structures attached to the vas deferens at one side of the bladder.

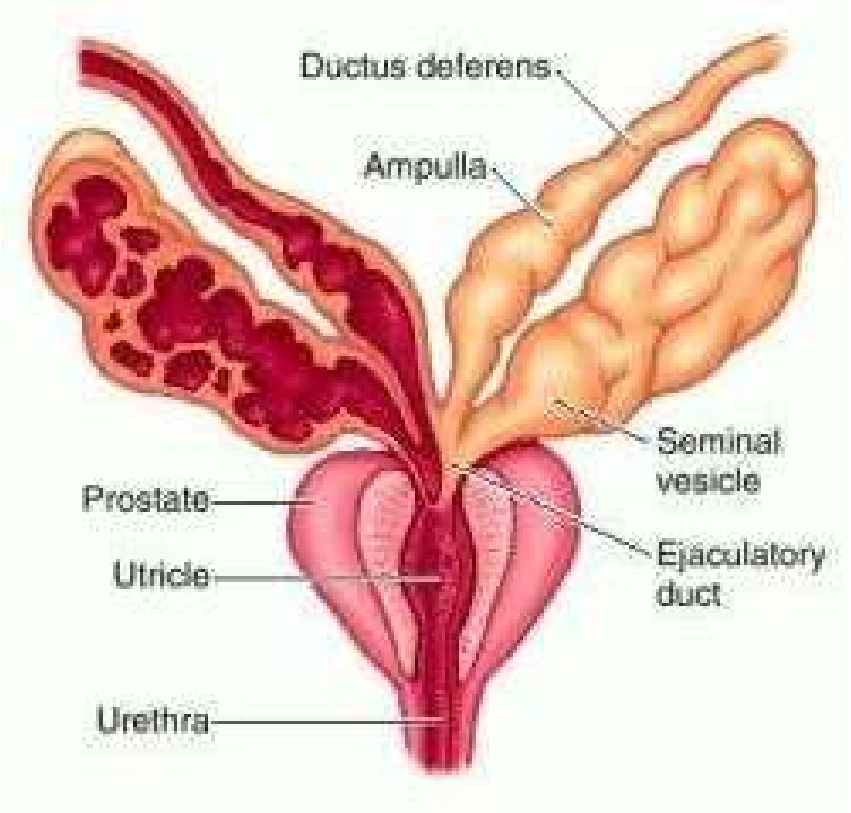
They produce a sticky yellowish fluid that contains fructose.



Prostate Gland

The Prostate Gland surrounds the ejaculatory ducts at the base of the urethra, just below the bladder.

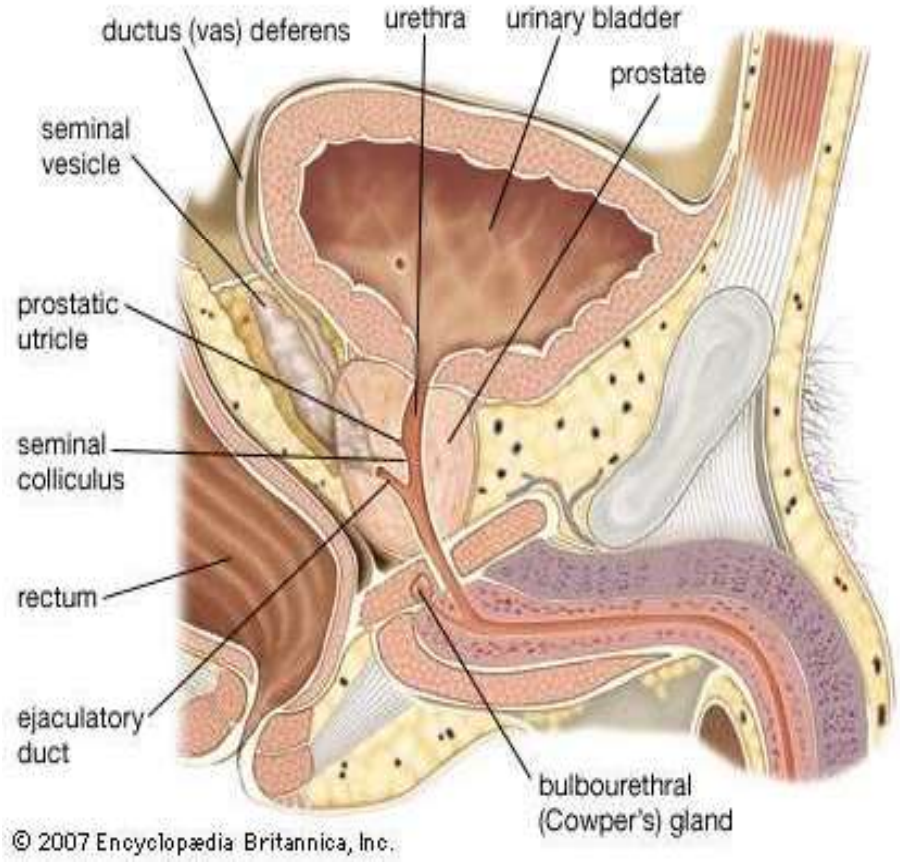
The Prostate Gland is responsible for making the production of semen, a liquid mixture of sperm cells, prostate fluid and seminal fluid.



Bulbourethral Glands

The Bulbourethral Glands are two small glands located on the sides of the urethra just below the prostate gland.

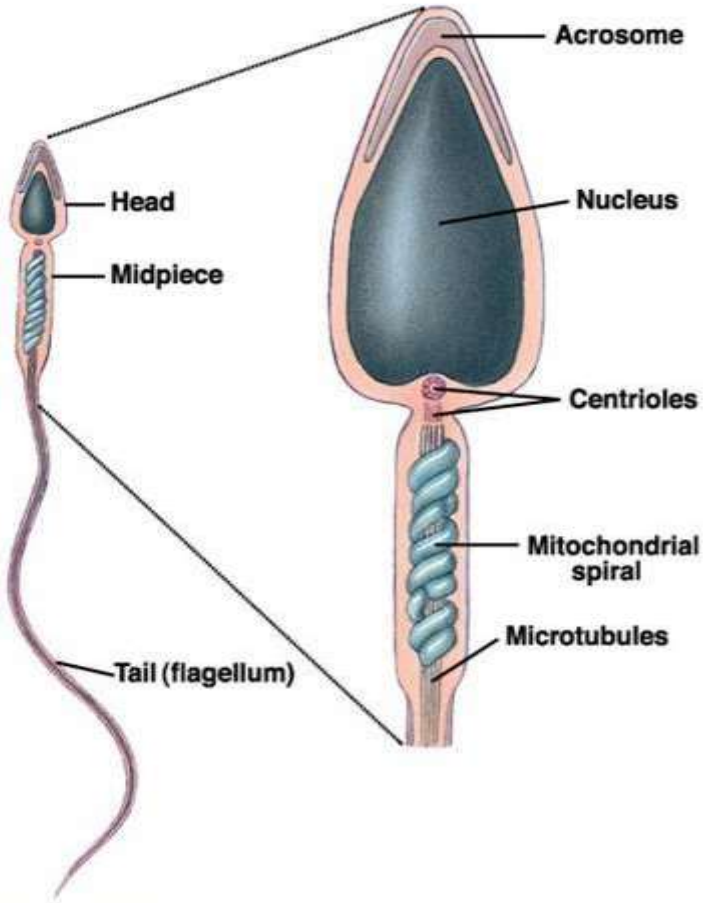
These glands produce a clear, slippery fluid that empties directly into the urethra.



- The main function of the Male Reproductive System is to produce sperm cells and deliver them to the female reproductive system.
- It consists of external and internal genital organs which are essential for the continuous reproduction of life.

SPERM

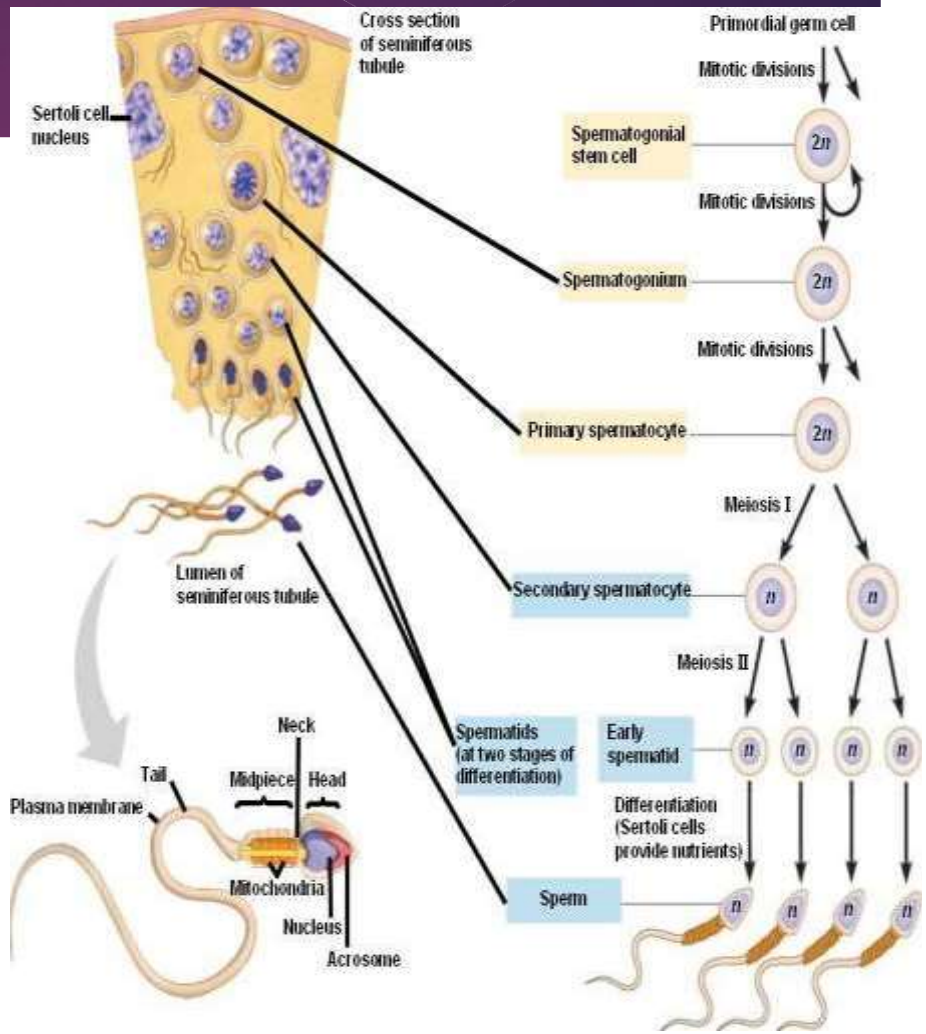
- ***Function:***
  - To move and carry genetic information to the egg.
- *Structure:*
  - **Head**: The large head region of the sperm that contains DNA.
  - **Midpiece**: The narrow middle part of the cell that contains mitochondria.
  - **Tail**: The wavelike motion of the flagellum propels the sperm forward.



SPERMATOGENESIS

Spermatogenesis is the formation of sperm cells.

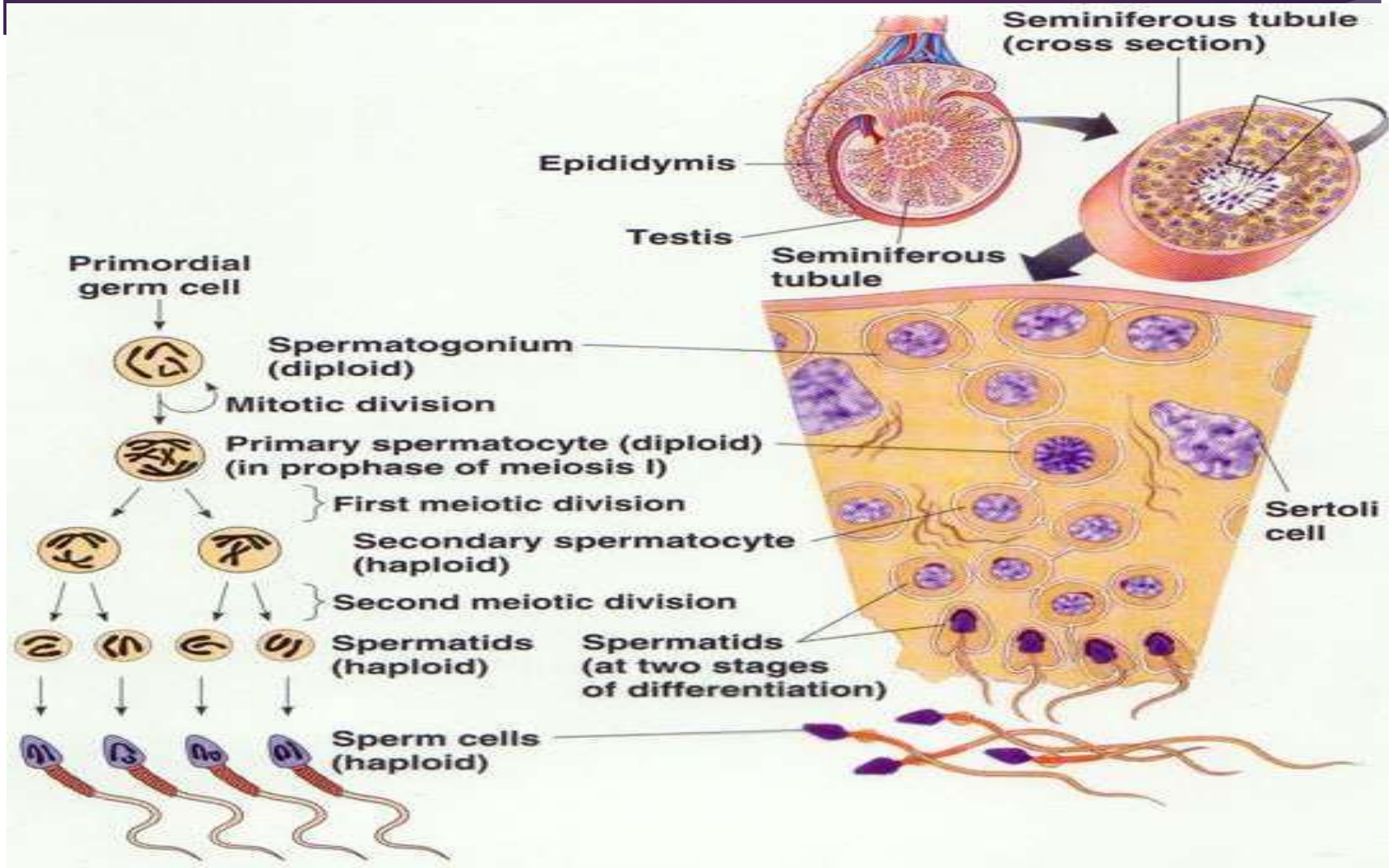
It takes place in the seminiferous tubules.



SPERMATOGENESIS

Click to see the video

SPERMATOGENESIS



Process:

- Diploid cells that begin the process are located near the outer wall of the tubules.

These cells multiply constantly by mitosis, and each day about 3 million of them differentiate into ***primary spermatocytes***, the cells that undergo meiosis.

Process:

- Meiosis I of a primary spermatocyte produces ***secondary spermatocytes***, each with the haploid number of chromosomes (n=23).

The cells are still in their duplicated state, each consisting of two identical chromatids.

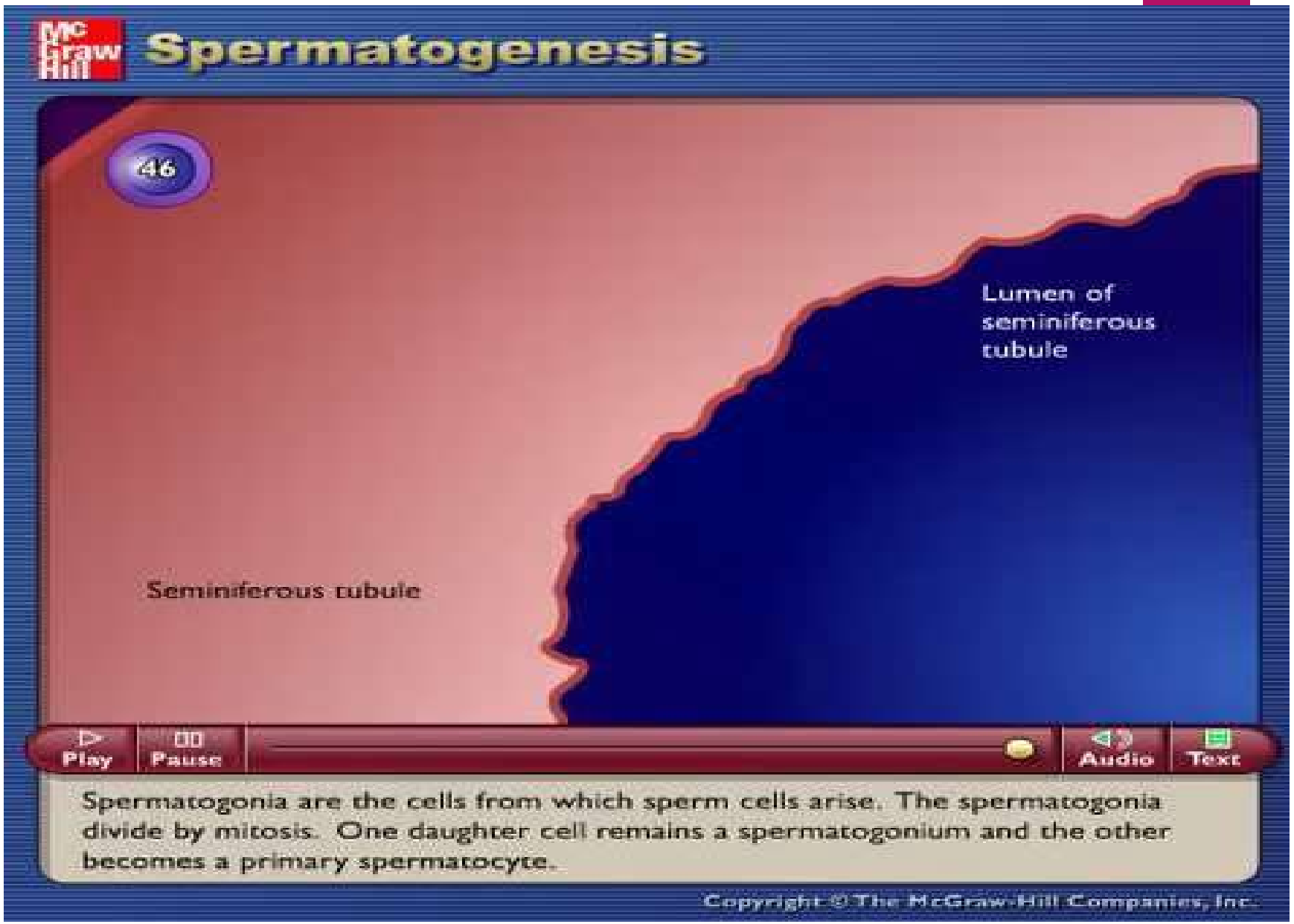
Process:

- Meiosis II then forms four cells, each with the haploid number of single-chromatid chromosomes.

Process:

- A sperm cell develops by differentiation of each of these haploid cells and gradually pushed toward the center of the seminiferous tubule.

  From there, it passes into the epididymis, where it matures, becomes motile, and is stored until ejaculation.



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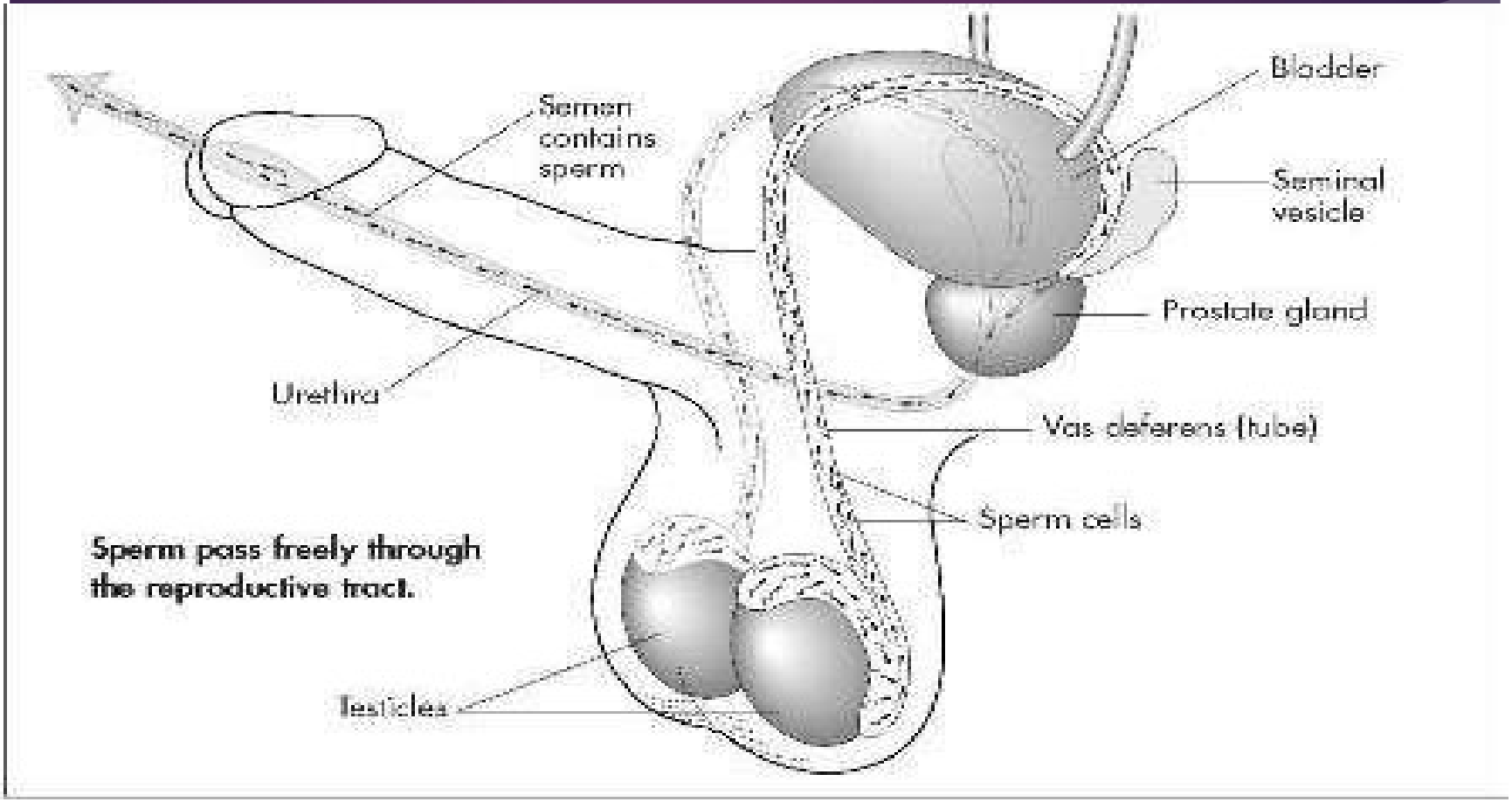
EJACULATION

Ejaculation is the discharge of semen from the penis.

During orgasm, the semen is forcefully expelled from the body by strong muscular contractions of sperm ducts.

EJACULATION



Process:

- At the peak of sexual arousal, muscles in the epididymis, seminal vesicles, prostate gland, and vas deferens contract.

  At the same time, a sphincter muscle at the base of the bladder contracts, preventing urine from leaking into the urethra from the bladder.

  Another sphincter also contracts, closing off the entrance of the urethra into the penis.

Process:

- In the second stage of ejaculation, the *expulsion stage*, the sphincter at the base of the penis relaxes, admitting semen into the penis.

  Simultaneously, a series of strong muscle contractions around the base of the penis and along the urethra expels the semen from the body.

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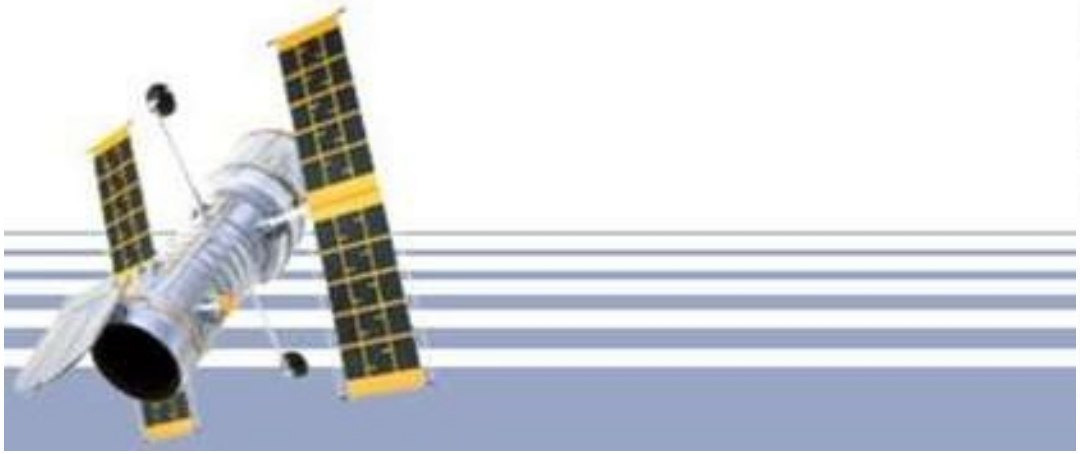
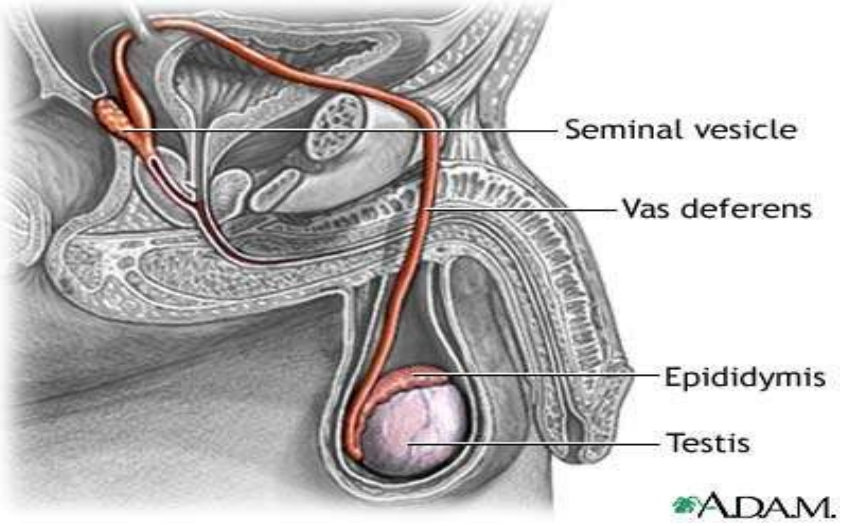
REVIEW:

The pathway of the sperm in the male reproductive system are the following:

(arrange in chronological order)

Testes → Epididymis → Vas Deferens → Ejaculatory Duct → Urethra





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