Brainbox learn easy

Chapter 03

HUMAN REPRODUCTION

GAMETOGENESIS

The primary sex organs – testis in male & ovaries in females produce gametes (sperm & ovum) – this process is called Gametogenesis.

(or)

Production of Gamates is called Gametogenesis.

Based on testis position:

Spermatogenesis catagorised in to 3 – types based on the testis position

7th Month – Externogenic development testis descend to scrotum, volume referance of FSH.

In testis:

Immature male gamet cells (spermatogonia) produce sperms by spermatogenesis that begins at puberty.

Spermatogonia(Spermatogonium):

Located inside wall of seminiferous tubule multiply mitatic division(its a process of nuclear division – Parent cell divides to produce two identical daughter cells) – seperation of duplicated genetic material.

Primary spermatogonium:

- Each spermatogenium is diploid – 46 chromosomes.
- Some primary sprematocytes periodicity undergo meiosis(diploid to haploid) separates pairs of homologous chromosomes.
- Secondary spermatocytes – which have only 23 chromosomes each.
- Again secondary spermatocytes undergo 2nd periodic division produce 4 equal haploid spermaticles. Spermaticles transform into spermagia.

This process is called **spermiogenesis**.

Hormon:

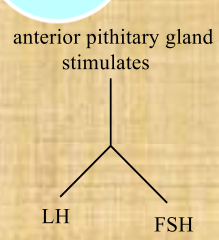
- Spermatogensis starts at pubarty due to significant increase in the secretion of Ganodotropin releasing hormone(GnRH) (or) hypothalmic hormone.
- G n RH acts at the anterior pituitary gland stimulate secretion of two gonodotropins
  - **Luteinising hormone (LH)**
  - **Follicle stimulatary hormone (FSH)**
  - **LH** acts leydig cells stimulats synthesis & seretion of androgans.
  - **Adrogen** – Stimulates process of spermatogensis.
  - **FSH** acts sertoli cells stimulates sumation of spermatogensis.

Gametogenesis – Spermatogensis.

SPERMATOGENESIS

It completed in 2 – phases.

1) Spermatogenesis (GnRH – Hypothalytic Hormone)



- Formation of spermatides:
  - Multiplication phase (luteinizing hormone)
  - Growth phase

2) Spermiogenesis:

- Formation of spermatides to sperm.
- Maturation phase

Spermiation:

- Release of mature sperm from sertoli's cells.

Duration:

- Process of spermatogenesis completed in 74 days.
- Transport on ductal system includes takes place 3 – months.

Production:

- Testes produce200 – 300 million spermatozoa daily.
- But only 100 million of these become viable sperm.
- Testis desends in to scrotal sac in **7th month** of embryonic development under the Influence of **FSH**.

FSH:

- Follicle stimulating hormone is a gonadotropin,
- A glycoprotein polypeptide hormone
- It is synthesized & secreted by the gonado tropic cells of the Anterior pituitary gland.
- It regulates the development, growth, pubertal maturation & Reproductive process of the body.

Spermatogenesis:

- In this process haploid spermatozoa develop from germ cells.
- In the seminiferous tubules of the testis.
- This process starts with the mitotic division of the stem cells (**spermatogonial stem cells** – located close to the basement membrane of the tubules)

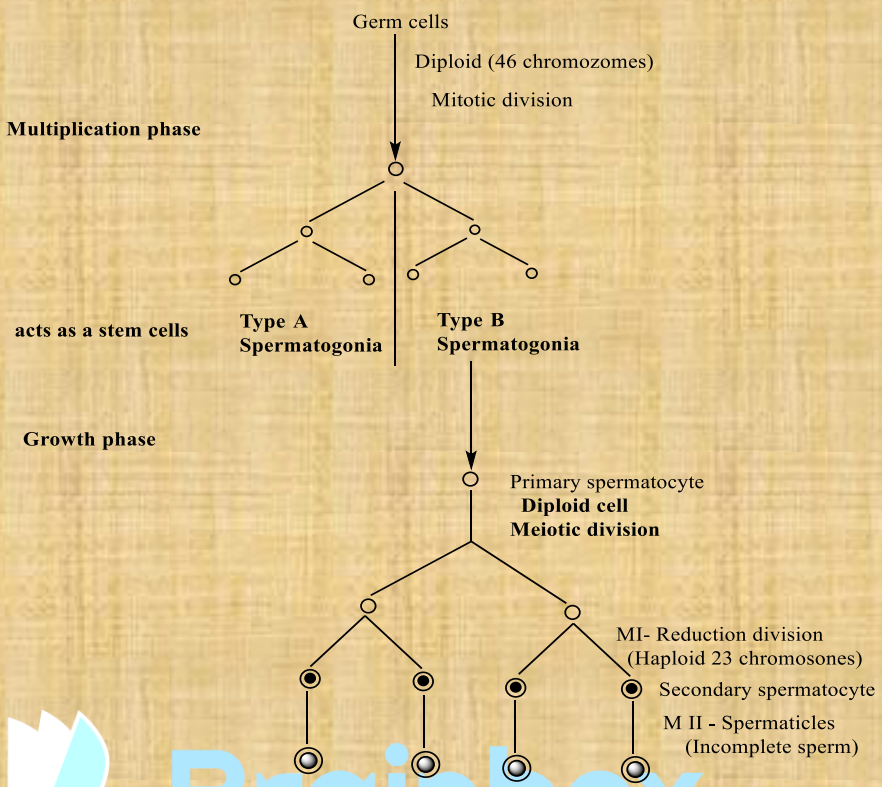
Luteinising Hormone(LH):

Act at the Leyding cells synthesis of secretion of androgen & stimulates the process of spermatogenesis**. spermatogenesis**.

Follicle stimulating Hormone(FSH):

Acts on sertoli cells & stimulates secretion of some factors which help in the process of **spermiogenesis**.

Spermatogenesis



Spermiogenesis:

Spermaticles to sperm.

Changes during spermiogensis.

1) Condensation of Nucleus:

- DNA + Basic protein
- By losing RNA + Acidic protein

2) Pointed anterior , oval & flat

3) Golgi body
- Acrosome - Produce sperm Lysis
- Golgi Rest - Remaining part degenarate

4) Covered with plasma membrane

5) Cytoplasm only in the tail region.

6) Mitochondria – spine & spring like

7) Proximal Centriole present in the neck region.

Spermiation:

Release of mature sperm from sertoli cells.

Human Sperm:

- It is a male reproductive cell(derived from the Greekword Sperma → Seed)
- These are Haploid, Flagellate, Motile.

Parts:

Four – Plasma membrame envelope Entire body.

1. **Head** :

   Elongated haploid nucleus, -Anterior – Acrosome(filled with enzymes that help Fertilization of ovum)

2. **Neck**:

   Proximal centrioles: Spindle formation of 1st zygote division

   Distal centrioles: Give rise to axial filaments

3. **Body**:
   - It is also called middle piece.
   - It possess numerous mitochandria
   - Which produce energy for the movement of Tail that facilitate sperm motility essential for Fertilization.
4. **Tail**:
   - It contains Flagellum – For movement

Annulus:

- Located at the distal end of the middle piece of sperm flagellum
- It serve as a stabilizing structure for tail rigid.

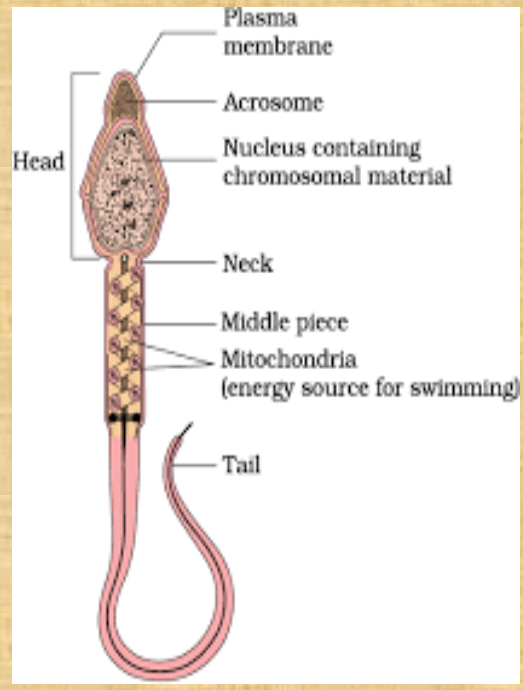


***Figure**: Sperm*

2 – Types of sperm : **XX** – Gynoperm ; **XY** – Andosperm.