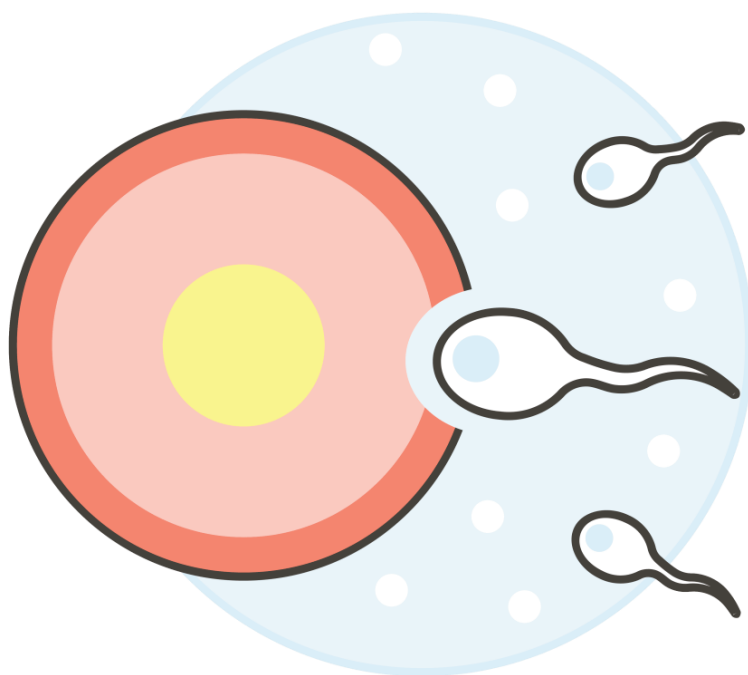


# HUMAN REPRODUCTION



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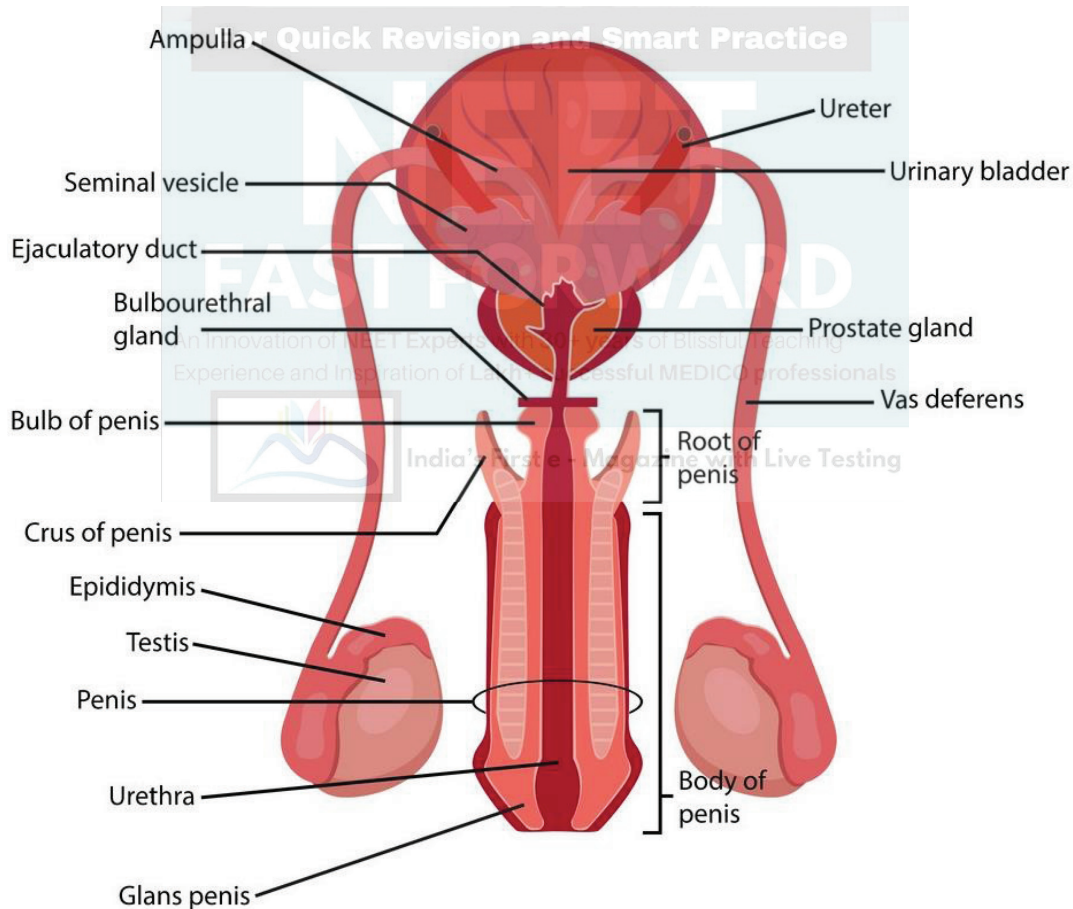
# HUMAN REPRODUCTION

## Human Reproductive System:

The Human Reproductive System mainly consists of:

### The Male Reproductive System:

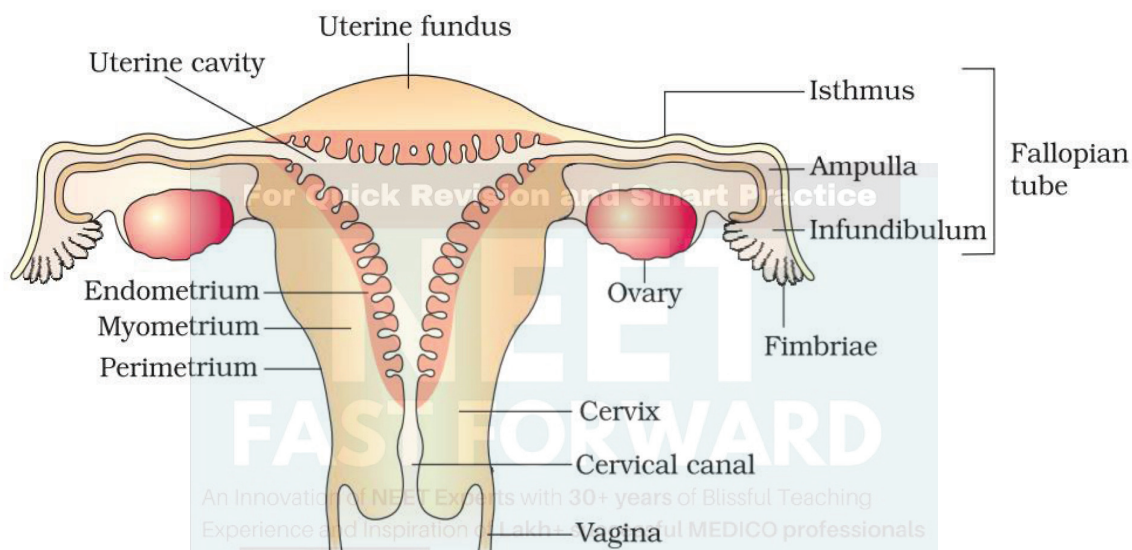
The male reproductive system is positioned in the pelvis region and comprises a pair of testes in addition to the accessory glands, ducts, and the external genitalia. A pouch-like structure known as scrotum encloses the testes located outside the abdominal cavity. Each testis has close to 250 testicular lobules (compartments). These lobules comprise 1-3 seminiferous tubules wherein the sperms are produced. The lining of these tubules consists of two types of cells – male germ cells and Sertoli cells. The exterior of these tubules consists of spaces containing blood vessels and Leydig cells. Male sex accessory ducts comprise rete testis, vasa efferentia, epididymis and vas deferens. The urethra opens externally to the urethral meatus. The male external genitalia, the penis, is covered by foreskin which is a loose fold of skin.



### The Female Reproductive System:

The female reproductive system is made up of the internal and external sex organs, which consists of a pair of ovaries and oviducts, cervix, uterus, vagina and the external genitalia situated in the pelvic region. Along with the mammary glands,

these female reproductive organs are combined both structurally and functionally in order to support the complete processes of reproduction including ovulation, fertilization, pregnancy, and the birth of a child. The female accessory ducts are constituted by the oviducts, vagina and uterus. The section closer to the ovary is funnel-shaped infundibulum that possesses the fimbriae – finger-like projections facilitating the assimilation of ovum post ovulation. The infundibulum directs to a wider section of oviduct known as ampulla. The last section of the oviduct, isthmus, has a narrow lumen joining the uterus. Uterus is also known as the womb. The cervical cavity is known as the cervical canal which goes on to form the birth canal along with the vagina. Female external genitalia comprises – mons pubis, labia minora, labia majora, clitoris and hymen. Both the male and female reproductive systems play an important role in the process of reproduction. Other than these reproductive organs, there are sex hormones which are produced by the respective glands and are mainly involved in the development of secondary sexual characteristics and proper functioning of the reproductive tracts.



### Gametogenesis:

The process of formation of male and female gametes in testes and ovary respectively is called gametogenesis.

**It is of two types:**

- Spermatogenesis in males
- Oogenesis in females

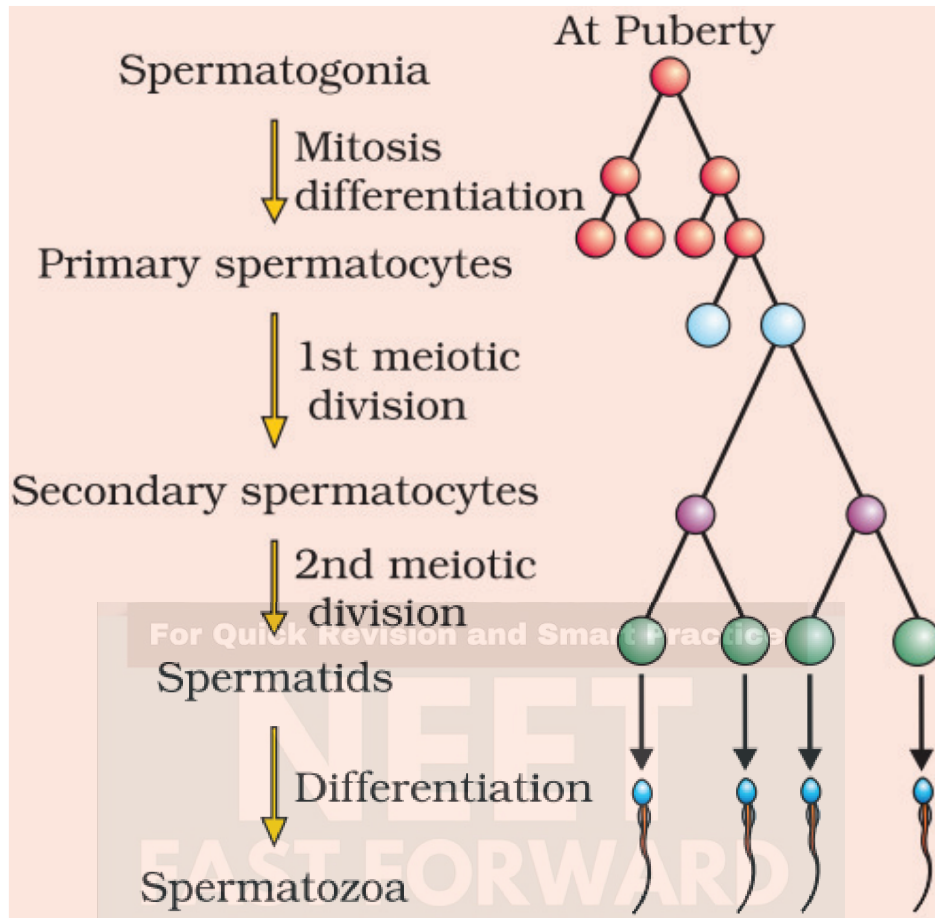
### Spermatogenesis:

In testes immature, male germ cells (spermatogonia) produce sperm by spermatogenesis that begins at puberty.

The spermatogonia present at the inner side of seminiferous tubules multiply by mitotic division and increase in number. Each spermatogonium contains 46 chromosomes.

Spermatogonia form spermatocytes that undergo meiotic division to reproduce secondary spermatocytes having 23 chromosomes.

The spermatids are transformed into spermatozoa by the process called spermiogenesis. The sperm heads remain embedded in sertoli cells and are released from seminiferous tubules by the process of spermiation.



### Hormonal control of spermatogenesis:

Spermatogenesis initiated due to increase in secretion of gonadotropin releasing hormone by hypothalamus.

Increase in GnRH act on anterior pituitary and stimulate secretion of two gonadotropins, LH and FSH.

LH acts on Leydig cells and stimulates them to secrete androgens.

FSH acts on Sertoli cells, stimulates secretion of some factors which help in spermiogenesis.

### Structure of sperm:

Sperm is a microscopic structure composed of a head, neck, a middle piece and a tail. The sperm head contain elongated haploid nucleus, anterior portion of which is covered by cap like structure acrosome.

Human male ejaculates about 200-300 million sperms during a coitus. The seminal plasma along with the sperms constitutes the semen. The function of male sex secondary ducts and glands are maintained by androgen hormones.



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