

## Location



The two testes (testicles) are oval shaped glands that sit in a pouch of skin (the scrotum) behind the penis. In adult men, each testis is between 12-25 ml in size, growing from 1-3 ml in prepubertal children. It is normal for the size of each testis to differ slightly and for one to sit lower than the other. Each testis is attached to the body by the spermatic cord, which contains nerves, blood vessels and the vas deferens (which carries sperm from the testes to the urethra).

The location of the testes and scrotum on the outside of the body means that the testes can be kept cooler than normal body temperature. This is important for sperm production.

The testes are made up of 200-300 compartments called lobules. Each lobule contains several coiled structures called seminiferous tubules, where sperm are made. The seminiferous tubules then release the sperm into a series of ducts where they mature and pass to the urethra. Around the seminiferous tubules are the specialised cells that produce testosterone, called the Leydig cells.

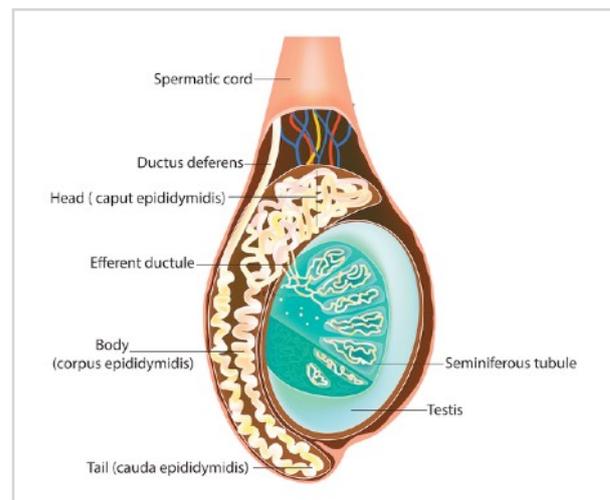
## Functions/ Roles

The two main functions of the testes are to produce sperm and to produce the male sex hormones (androgens). This makes the testis both an endocrine and exocrine gland (which

release substances into a duct rather than directly into the blood like endocrine glands).

Testosterone has many functions including:

- Growth and development of male reproductive organs (penis and testes)
- Growth spurt at puberty
- Production and maturation of sperm
- Growth of facial and body hair
- Deepening voice
- Growth of the Adam's apple
- Sex drive/libido
- Maintenance of bone density
- Maintenance of muscle mass and strength
- Fetal development of male reproductive organs
- Increasing red blood cell count



## Hormones produced by the testes

**Testosterone** is the main hormone that promotes the development and maintenance of male characteristics. Testosterone can be converted into a more active male sex hormone, called dihydrotestosterone (DHT).

**Inhibin B** is released from the Sertoli cells in the seminiferous tubules of the testes. It plays a key role in regulating follicle stimulating hormone (FSH) release from the pituitary gland.

**Anti-Mullerian hormone (AMH)** is important for sex differentiation in the unborn baby during early pregnancy. It is produced in male babies by

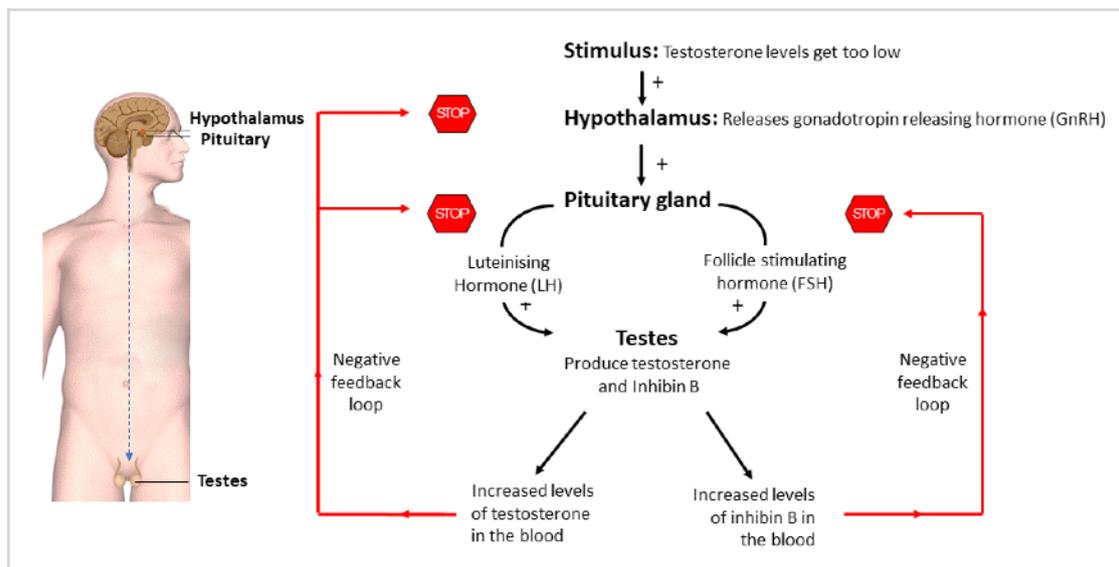
the testes, where it shuts down the development of Mullerian (female) ducts. These ducts would otherwise develop into parts of the female reproductive tract (fallopian tubes, uterus and vagina). This allows the development of the epididymis, vas deferens and the seminal vesicles of the testes.

**Estradiol** is produced in small amounts in men by the Leydig cells of the testes. Levels of estradiol in the blood of men are similar to (in fact slightly higher than) those in women after menopause. In men, estradiol contributes to bone health and the maturation of sperm.

## Keeping testis hormone levels in balance

**Testosterone** levels are controlled through a negative feedback loop. The hypothalamus releases gonadotrophin releasing hormone (GnRH) which signals the pituitary gland to release luteinising hormone (LH). LH signals the testes to produce testosterone. When testosterone levels reach a threshold, the hypothalamus makes less GnRH. This loop keeps testosterone levels within a normal range.

**Inhibin B** levels are controlled through a negative feedback loop. In fertile men, follicle stimulating hormone (FSH) released from the pituitary gland signals the testes to make inhibin B. This increase in inhibin B signals the pituitary to decrease FSH production. This loop keeps inhibin B levels within a normal range.



## Common problems and conditions of the testes

- Hypogonadism
- Cryptorchidism
- Testicular cancer
- Male infertility