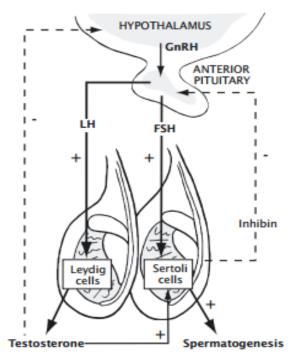
Hormonal control of male Reproductive system

The principle of reproduction in the male shows a pattern similar to that in the female. Figure 4 is an illustration of the control of the male reproductive function.

Figure 4 Interrelationships in the control of male reproductive function.



GnRH from the hypothalamus stimulates the release of FSH and LH (in the male formerly called ICSH = interstitial cell stimulating hormone).

FSH acts directly on the seminiferous tubules of the testis (germ cells and Sertoli cells). Here spermatogenesis is stimulated by FSH.

Sertoli cells produce inhibin, which has a negative feedback on FSH secretion by the pituitary gland.

testosterone is bound within the tubule lumen by the secretory product of the Sertoli cells, androgen-binding protein (ABP). The role of ABP therefore appears to be to maintain high androgen concentrations in the lumina of the seminiferous tubule and epididymis.

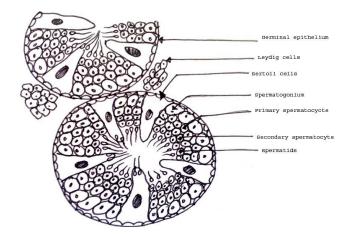
The main target of FSH is the Sertoli cell, Under the influence of FSH, Sertoli cells secrete ABP and aromatize testosterone into oestrogens, while FSH is also responsible for regulate or support spermatogenesis.

Most aspects of spermatogenesis require support by FSH and /or testosterone. However, it appears from LH stimulates the production of testosterone by the Leydig cells.

Testosterone influences the Sertoli cells and is necessary for successful spermatogenesis. Furthermore testosterone induces morphological changes and typical male behaviour.

Function of Testosterone:

- 1- Testosterone is required for the production of sperm and their subsequent maturation in the epididymis,
- 2- for the function of the accessory sex glands
- 3- for the development of masculine secondary sexual characteristics.
- 4- Testosterone has a negative feedback on the LH secretion by suppressing the pulsatile GnRH release from the hypothalamus.



Leydig cells are the male equivalent of the follicular theca interna cells.

Sertoli cells are the male equivalent of the follicular granulosal cells.

Figure 10-3. Interrelationships Among Hormones Produced by Sertoli Cells, Leydig Cells, the Hypothalamus and the Anterior Lobe of Pituitary The Sertoli cells produce inhibin that exerts a negative feedback on the anterior lobe of the pituitary to directly suppress FSH secretion.. 0 0 T 0 0 LH Inhibin Sertoli cell DHT DHT - Tight junction DHT < $E_2 \leftarrow T$ Leydig cells T

Blue spheres = spermatogia; Red spheres = primary speratophytes; Brown spheres = secondary spermatophytes; Black spheres = spermatids

Testosterone (T) produced by the Leydig cells is transported into the Sertoli cells where it is converted to dihydrotestosterone (DHT) and also estrogen (E₂). Testosterone and E₂ are transported by the blood to the hypothalamus where they exert a negative feedback on the GnRH neurons.

LH binds to receptors in the interstitial cells of Leydig and FSH binds to Sertoli cells. Leydig cells produce testosterone that is transported to the adjacent vasculature and the Sertoli cells where T is converted to DHT.