SEMINIFEROUS TUBULES

Tube structures within the testes where spermatogenesis occurs.

💖 Organ    ♂ Male

About Seminiferous tubules

Function

Seminiferous tubules are located within the testes, and are the specific location of meiosis, and the subsequent creation of male gametes, namely spermatozoa. As just noted, spermatogenesis occurs in the seminiferous tubules that form the bulk of each testis (Pic. 1). They are composed of developing sperm cells surrounding a lumen, the hollow center of the tubule, where formed sperm are released into the duct system of the testis (Pic. 2, Pic. 3). Specifically, from the lumens of the seminiferous tubules, sperm move into the straight tubules (or tubuli recti), and from there into a fine meshwork of tubules called the rete testes. Sperm leave the rete testes, and the testis itself, through the 15 to 20 efferent ductules that cross the tunica albuginea.

Histological structure

Inside the seminiferous tubules are six different cell types. These include supporting cells called sustentacular cells, as well as five types of developing sperm cells called germ cells. The epithelium of the tubule consists of sustentacular or Sertoli cells, which are tall, columnar type cells that line the tubule. In between the Sertoli cells are spermatogenic cells, which differentiate through meiosis to sperm cells. Sertoli cells function to nourish the developing sperm cells. They secrete testis-determining factor, a binding protein which increases the concentration of testosterone inside the seminiferous tubules.

Development

The seminiferous tubules are formed from the testis cords that develop from the primitive gonadal cords, formed from the gonadal ridge.

Related disorders of seminiferous tubules

- Seminiferous tubule dysgenesis (Klinefelter syndrome)
- Seminiferous tubule degeneration in human cryptorchid testes

Two types of degenerating seminiferous tubules were found in cryptorchid testes with Sertoli cell hyperplasia of children and adults:

a) tubules with central degeneration
b) tubules with total degeneration

Find more about related issues

診断
Klinefelter syndrome
The set of symptoms that result from two or more X chromosome in males.
Learn more at: www.fertilitypedia.org/therapy/diag/klinefelter-syndrome

Testicular failure
The inability of the testicles to produce sperm or testosterone.
Learn more at: www.fertilitypedia.org/therapy/diag/testicular-failure

Undescended testes
In the case of cryptorchidism one or both testes are absent from the scrotum. It is the most common etiologic factor of azoospermia in the adult.
Learn more at: www.fertilitypedia.org/therapy/diag/undescended-testes

Mainorgan

Testes
Male gonads which produce both sperm and androgens, such as testosterone, and are active throughout the reproductive lifespan of the male.
Learn more at: www.fertilitypedia.org/edu/organs/testes

Gallery

This sagittal view shows the seminiferous tubules, the site of sperm production.

Seminiferous tubule in cross-section (large tubular structure - center of image) with sperm (black, tiny, ovoid bodies furthest from the outer edge of the tubular structure).
Pic
Microscopic shot of seminiferous tubule (cross section).

Sources

"Anatomy and Physiology of the Female Reproductive System" [https://cnx.org/contents/FPtK1zm8@8.1:nMy6WSQ@5/Anatomy-and-Physiology-of-the]" — sourced from OpenStax College licensed under CC BY 4.0 Download for free at http://cnx.org/content/col11496/latest/

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