Male Reproductive System:
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The male reproductive system includes the two testes, the system of ducts that store and transport sperm to the exterior, the glands that empty into these ducts and the penis. The duct system, glands and penis constitute the male accessory reproductive organs.

The testes are suspended outside the body in the scrotum, which is an outpouching of the abdominal wall and is divided internally into two sacs, one for each testis. During embryonic development, the testes are located in the abdomen, but during the seventh month of intrauterine development, they descend into the scrotum. This descent is essential for normal sperm production during adulthood, since sperm formation requires a temperature lower than normal internal body temperature. The testes are kept cooler than this by air circulating around the scrotum and by a heat exchange mechanism in the blood vessels supplying the testes. In contrast to spermatogenesis testosterone secretion can occur normally at internal body temperature, and so failure of testes descent does not impair testosterone secretion.

The site of sperm formation (spermatogenesis) in the testis are the many tiny convoluted seminiferous tubules, the combined length of which is 250 m. Each seminiferous tubule is bounded by a
basement membranes and a layer of smooth-muscle-like cells which are responsible for peristaltic movements of the tubules. In the centre of each tubule is a fluid filled lumen. The remainder of the tubule contains germ cells and another cell type, the sertoli cells. The endocrine Leydig cells (also called interstitial cells), which secrete testosterone, lie in small connective-tissue spaces between the tubules. Thus, the sperm producing and testosterone producing function of the testes are carried out by different structures.

Sperms, following their formation, move through the duct system leading from the seminiferous tubules to the urethra. First, the seminiferous tubules from different areas of a testis unite to form a network of interconnected tubes, the rete testis. Small ducts termed efferent ductules leave the rete testis, pierce the fibrous covering of the testis, and empty into a single duct the epididymis. The epididymis loosely attached to the outside of the testis, and the duct of the epididymis is so convoluted that, when straightened out at dissection, it measures 6 m. In turn, the epididymis draining each testis leads to a vas (ductus) deferens. The vas deferens, the blood vessels and the nerves supplying the testis are bound together in the spermatic cord, which passes through a slit like passage, the inguinal canal, in the abdominal wall.
After entering the abdomen, the two vas deferens one from each side course to the back of the bladder base and become the ejaculatory ducts. Just at this transition, the seminal vesicles, which lie behind the bladder, drain into the two ductus deferens. The ejaculatory ducts then enter the substance of the prostate gland and join the urethra. The prostate gland is a single donut-shaped gland below the bladder surrounding the upper part of the urethra. The urethra leaves the prostate gland to enter the penis. The paired bulbourethral glands, lying below the prostate, drain into the urethra just after it leaves the prostate.

The prostate gland and seminal vesicles secrete the bulk of the fluid in which ejaculated sperm are suspended. This fluid, plus the sperm cells, constitute semen, the sperm contributing only a few percent of the total volume. The glandular secretions contain a large number of different chemical substances, including nutrients, buffers for protecting the sperm against the acidic vaginal secretions and prostaglandins. The function of the prostaglandins in semen is still not clear. The bulbourethral glands contribute a small volume of mucoid secretions.

**Hormonal Regulation**

The hormonal regulation of testis begins in the hypothalamus which synthesizes and releases in a pulsative manner, a
decapeptide gonadotropin releasing hormone (GnRH). This hormone regulates the secretion of pituitary hormones which in turn through a complex feedback mechanism between the various hormones and regulate testicular hormone secretion. Two pituitary gonadotropic hormones are present in the male luteinizing hormone (LH) and follicle stimulating hormone (FSH). These glycoprotein hormones are identical to the gonadotropins of the female. LH stimulates the Leydig cells to convert cholesterol to testosterone. FSH induces the sertoli cells to form androgen binding protein, which may assist testosterone movement toward the seminiferous tubular lumen and the epididymis. FSH also induces the sertoli cells to convert the testosterone to 5-dihydro testosterone (5α-DHT), 17β estradiol and also to produce inhibin. The 5α-DHT is more active than testosterone and along with 17β estradiol, is involved in the development and function of the accessory sex glands, penis, scrotum, the secondary male sex characteristics, libido and potency. Testosterone is responsible for maintenance of spermatogenesis, whereas FSH is needed to initiate spermatogenesis at the onset of puberty. Hormonal integration of the hypothalamic-pituitary testicular axis is a basic requirement for normal spermatogenesis and any hormonal imbalance may result in the partial or complete compromise of fertility potential.