

The Male Reproductive System

- The male reproductive system is much simpler than the female, as sperm production is relatively constant from puberty onward
- The effects of the male reproductive hormones are obvious in steer, cattle which have had their testes removed (castration)
- Their body mass is higher (more fat), they are less aggressive than bulls, lack a sex drive
- The male sex hormones androstosterone and testosterone are produced in the interstitial cells of the testes (male gonad)
- The interstitial cells are found between the seminiferous (sperm-producing) cells (see Fig. 1, p. 393)
- Testosterone is the more potent and abundant hormone, and it stimulates spermatogenesis, the process by which spermatogonia divide and differentiate into mature sperm cells
- Testosterone also influences the development of secondary male sexual characteristics at puberty, stimulating the maturation of the testes and penis and triggering the sex drive
- The male sex hormone also promotes the development of facial and body hair, the growth of the larynx (lowers voice), and the strengthening of the muscles
- It also increases the secretion of the body oils and is linked to acne and body odour
- Once males adjust to the higher levels of testosterone, skin problems decline

- Like the female reproductive system, the hypothalamus and pituitary gland exert control over the male reproductive system
- At puberty, the hypothalamus secretes GnRH, which activates the pituitary to release FSH and LH
- The FSH acts directly on the sperm-producing cells of the seminiferous tubules
- LH stimulates the interstitial cells to produce testosterone
- Rising testosterone levels also increases sperm production
- These are the exact same hormones that control ovulation and menstruation in females
- Once high levels of testosterone are detected by the hypothalamus a negative feedback system is activated
- Testosterone inhibits GnRH production in the hypothalamus, preventing LH from being secreted from the pituitary
- Decreased LH leads to less testosterone production, keeping levels constant and ensuring adequate numbers of sperm cells
- FSH acts on support cells (Sertoli cells), which produce a peptide hormone called inhibin that sends a feedback message to the pituitary, inhibiting production of FSH

- Similarities between male and female systems extend beyond the secretion of FSH and LH
- Androgens (male sex hormones) and estrogen (female sex hormone) can be produced by either gender
- Male characteristics result because the level of androgens exceed the level of estrogen
- Males are ensured of maintaining low levels of female hormones by excreting them at an accelerated rate (the urine of stallions often contains high levels of estrogen)

- Secretions of androgens stimulate the development of the male's prostate gland, but injections of estrogen slow the process
- Cancerous prostate tumours can be slowed by injections of estrogen-like compounds

Homework

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