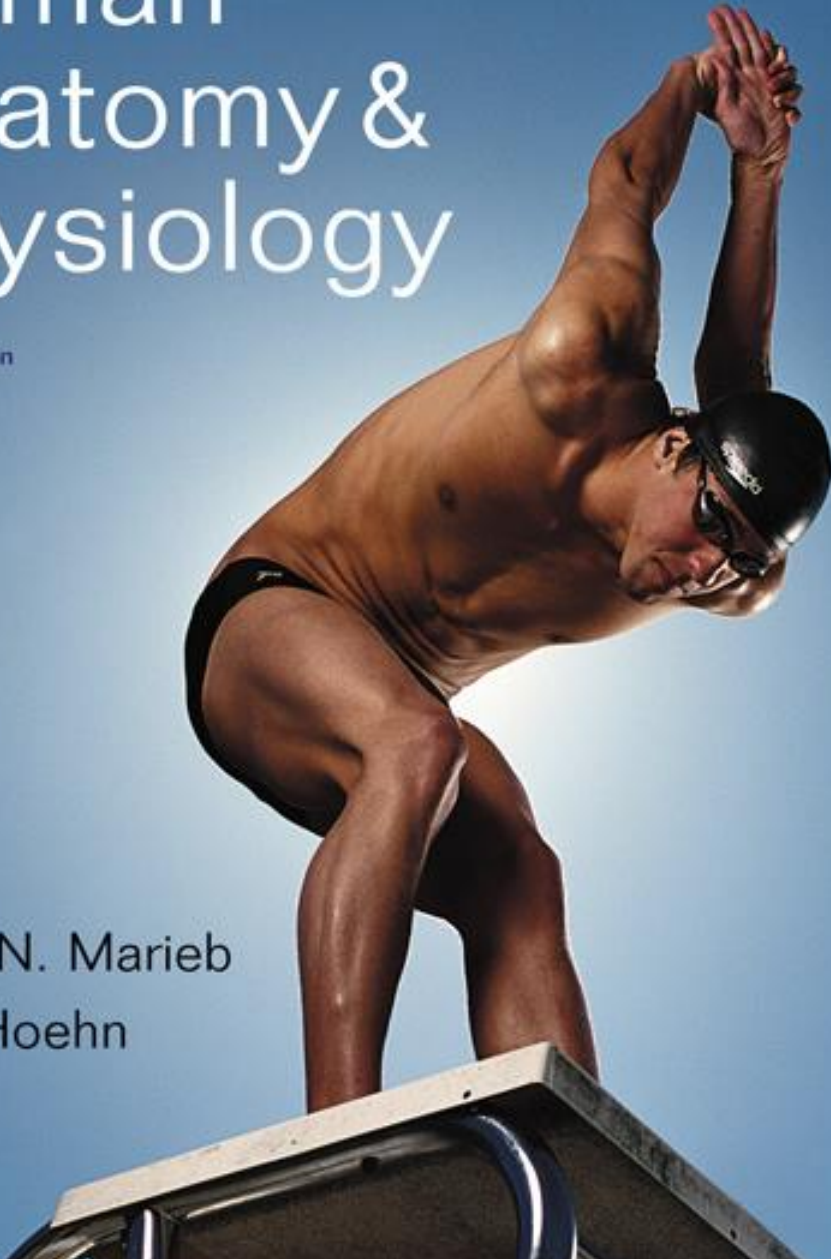


Human Anatomy & Physiology

Eighth Edition

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PowerPoint® Lecture Slides
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CHAPTER *27*

The Male Reproductive System: Hormonal Regulation

Male Reproductive System – Hormonal Regulation

- Hormonal Regulation of Male Reproductive Function – pp. 1038 – 1040

Hormonal Regulation of Male Reproductive Function

- A sequence of hormonal regulatory events involving the hypothalamus, anterior pituitary gland, and the testes
 - The hypothalamic-pituitary-gonadal (HPG) axis

HPG Axis

1. Hypothalamus releases gonadotropin-releasing hormone (GnRH)
2. GnRH stimulates the anterior pituitary to secrete FSH and LH
3. FSH causes sustentacular cells to release androgen-binding protein (ABP), which makes spermatogenic cell receptive to testosterone
4. LH stimulates interstitial cells to release testosterone

HPG Axis

5. Testosterone is the final trigger for spermatogenesis
6. Feedback inhibition on the hypothalamus and pituitary results from
 - Rising levels of testosterone
 - Inhibin (released when sperm count is high)

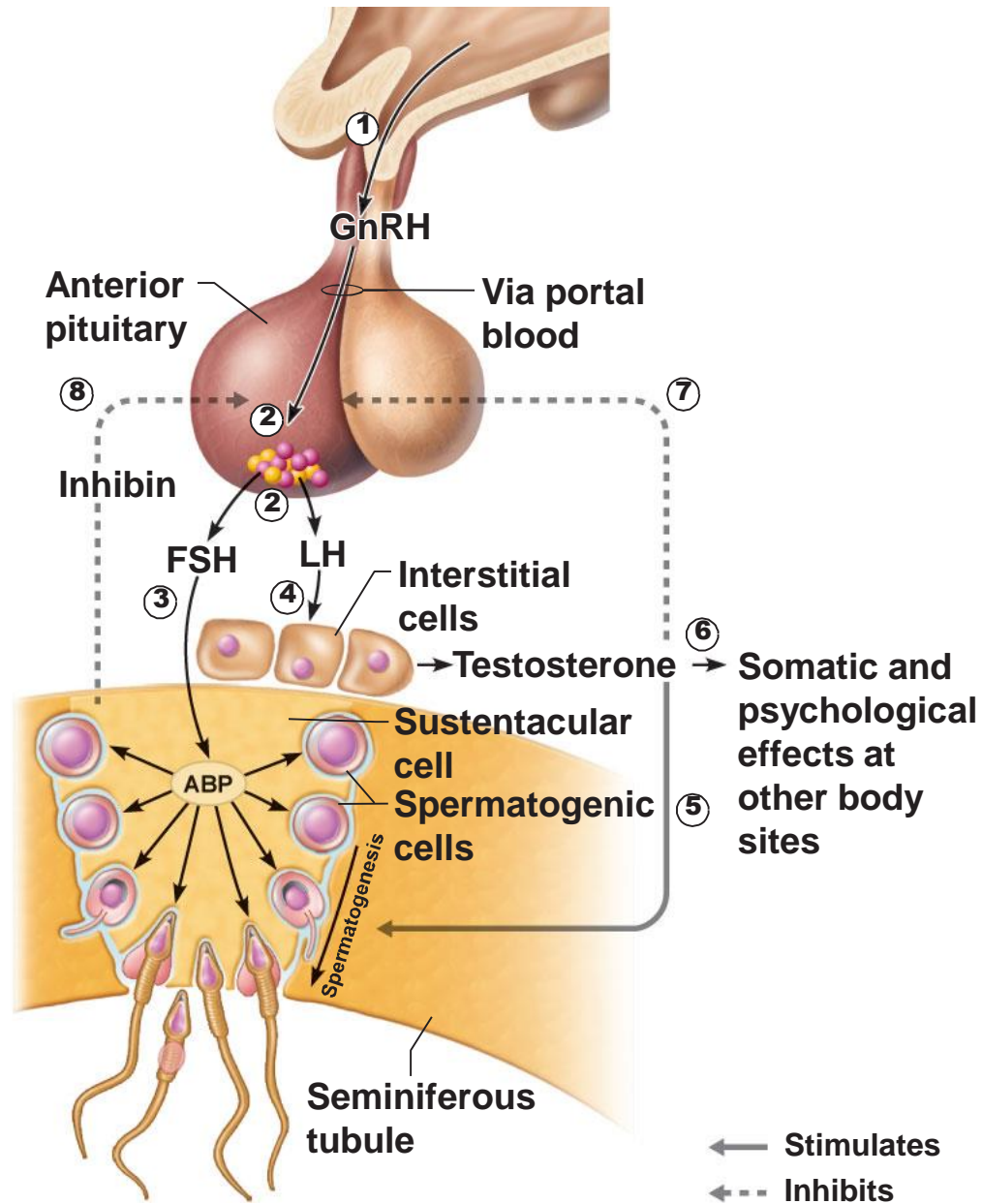


Figure 27.9

Mechanism and Effects of Testosterone Activity

- Testosterone
 - Synthesized from cholesterol
 - Transformed to exert its effects on some target cells
 - Dihydrotestosterone (DHT) in the prostate
 - Estrogen in some neurons in the brain

Mechanism and Effects of Testosterone Activity

- Prompts spermatogenesis
- Targets all accessory organs; deficiency leads to atrophy
- Has multiple anabolic effects throughout the body
- Is the basis of the sex drive (libido) in males

Male Secondary Sex Characteristics

- Features induced in the nonreproductive organs by male sex hormones (mainly testosterone)
 - Appearance of pubic, axillary, and facial hair
 - Enhanced growth of the chest and deepening of the voice
 - Skin thickens and becomes oily
 - Bones grow and increase in density
 - Skeletal muscles increase in size and mass