Chapter 27

The Reproductive System

PowerPoint® Lecture Slides
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The human *reproductive system* produces, stores, nourishes, and transports functional male and female gametes.

- **Sperm** from male
- **Ovum** from female
- **Fertilization** produces a *zygote*.

The reproductive system also produces sex hormones that affect the structure and function of all other systems.
Organization of the Reproductive System

- Reproductive organs, or gonads
  - Produce gametes and hormones
- Reproductive tracts
  - Receive, store, and transport the gametes
- Accessory glands and organs
  - Secrete fluids into the ducts of the reproductive system or into other excretory ducts
- Perineal structures called external genitalia
Anatomy of the Male Reproductive System

- Primary organ
  - Testes

- Accessory ducts
  - Epididymus
  - Ductus deferens
    - Ejaculatory duct

- Accessory glands
  - Seminal glands
  - Prostate gland
  - Bulbo-urethral glands

- External genitalia
  - Scrotum
  - Penis
Anatomy of the Male Reproductive System

Figure 27.1 The Male Reproductive System, Part I

Corpus spongiosum
Corpus cavernosum
Spongy urethra
Epididymis
Penis
Testis
External urethral orifice
Scrotum

Pubic symphysis
Urinary bladder
Ureter
Seminal gland
Prostatic urethra
Rectum
Prostate gland
Ejaculatory duct
Anus
Bulbo-urethral gland
Ductus deferens
Figure 27.2 The Descent of the Testes
Figure 27.3 The Male Reproductive System, Part II
Anatomy of the Male Reproductive System

Figure 27.4 Structure of the Testes

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Figure 27.5a Histology of the Seminiferous Tubules
Figure 27.5b Histology of the Seminiferous Tubules
Figure 27.5c Histology of the Seminiferous Tubules
Figure 27.5d Histology of the Seminiferous Tubules
Figure 27.6a Spermiogenesis Histology

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Figure 27.6b Spermatozoon Histology

(b) Spermatozoa

SEM × 1688
Figure 27.7a Testis and Epididymis

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Anatomy of the Male Reproductive System

Figure 27.7b Epididymis

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Figure 27.7c Epididymis

- Flagella of spermatozoa in lumen of epididymis
- Stereocilia
- Pseudostratified columnar epithelium of epididymis

(c) Epididymis  LM × 304
Anatomy of the Male Reproductive System

Figure 27.8 The Ductus Deferens and Accessory Glands

(c) Seminal gland

(d) Bulbo-urethral gland

(e) Prostate gland

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Figure 27.9a The Penis: (a) Frontal Section
Anatomy of the Male Reproductive System

Figure 27.9b The Penis: (b) Cross Sections

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Anatomy of the Male Reproductive System

Figure 27.9c The Penis: (c) Oblique Lateral View

Membranous urethra

Bulb of penis

Right crus of penis

Ishial ramus

Corpus spongiosum

Corpora cavernosa

Scrotum

Pubic symphysis

Body (shaft) of penis

Glans

External urethral orifice

(c) Oblique lateral view
Figure 27.9d The Penis: (d) Cross Section through Dissected Penis
Anatomy of the Female Reproductive System

- **Primary organ**
  - Ovaries
- **Accessory ducts and organs**
  - Uterine tubes
  - Uterus
    - Cervix
  - Vagina
- **External genitalia**
  - Vulva
    - Vestible
  - Clitoris
- **Mammary glands**
Figure 27.10 The Female Reproductive System
Figure 27.10 The Female Reproductive System
Figure 27.11a, b The Ovaries, Uterine Tubes, and Uterus: (a) Posterior View; (b) Ovary and Mesenteries, Sectional View
Anatomy of the Female Reproductive System

Figure 27.11c  The Ovaries, Uterine Tubes, and Uterus: (c) Superior View
Anatomy of the Female Reproductive System

Figure 27.12 Histological Summary of the Ovarian Cycle

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Figure 27.12 Histological Summary of the Ovarian Cycle
Anatomy of the Female Reproductive System

Figure 27.12 Histological Summary of the Ovarian Cycle
Figure 27.13 Meiosis and Ovum Production
Figure 27.14 The Uterine Tubes

- Isthmus
- Ampulla
- Infundibulum
- Fimbria
- Columnar epithelium
- Lamina propria
- Smooth muscle
- Microvilli of mucin-secreting cells
- Cilia

(c) SEM of the epithelial surface

LM × 122
Figure 27.15a The Uterus

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Figure 27.15b The Uterus
Figure 27.16 The Uterine Wall
Figure 27.17 Histological Changes in the Uterine Cycle
Figure 27.18 The Hormonal Regulation of Female Reproductive Function
Figure 27.19 Histology of the Vaginal Wall
Figure 27.20 The Female External Genitalia
Anatomy of the Female Reproductive System

Figure 27.21a The Mammary Glands

- Pectoralis major muscle
- Pectoral fat pad
- Suspensory ligaments
- Lobes of mammary glands
- Lactiferous duct
- Areola
- Nipple
- Lactiferous sinus

(a) Left breast
Anatomy of the Female Reproductive System

Figure 27.21b The Mammary Glands

- Pectoral fat pad
- Suspensory ligaments
- Lactiferous sinus
- Nipple
- Areola
- Pectoralis major muscle

(b) Xeromammogram
Figure 27.21c, d The Mammary Glands

(c) Resting mammary gland  LM × 60

(d) Active mammary gland  LM × 131

- Secretory alveoli
- Milk
- Lactiferous ducts
- Connective tissue of dermis
- Ducts of compound tubuloalveolar gland
Figure 27.22 Uterovaginal Prolapse
Aging and the Reproductive System

- **Menopause**
  - The time when ovulation and menstruation cease
  - Typically occurs in females at age 45–55
  - Decline in estrogen and progesterone levels and rise in GnRH, PSH, and LH levels

- **Male climacteric**
  - Decline in testosterone levels and rise in FSH and LH levels
  - Typically occurs in males between ages 50 and 60
  - Sperm production continues, but there is gradual reduction in sexual activity