

## Reproductive System

- Gonads – primary sex organs
  - Testes in males
  - Ovaries in females
- Gonads produce gametes (sex cells) and secrete hormones
  - Sperm – male gametes
  - Ova (eggs) – female gametes

## Male

- Testes
- Duct system
  - Epididymis
  - Ductus deferens
  - Urethra
- Accessory organs
  - Seminal vesicle
  - Prostate gland
  - Bulbourethral gland
- External genitalia
  - Penis
  - Scrotum

## Testes

- Coverings of the testes
  - Tunica albuginea – capsule that surrounds each testis
- Coverings of the testes (continued)
  - Septa – extensions of the capsule that extend into the testis and divide it into lobules
- Each lobule contains one to four seminiferous tubules
  - Tightly coiled structures
  - Function as sperm-forming factories
  - Empty sperm into the rete testis
- Sperm travels through the rete testis to the epididymis
- Interstitial cells produce androgens such as testosterone
- Comma-shaped, tightly coiled tube
- Found on the superior part of the testis and along the posterior lateral side
- Functions to mature and store sperm cells (at least 20 days)
- Expels sperm with the contraction of muscles in the epididymis walls to the vas deferens
- Carries sperm from the epididymis to the ejaculatory duct
- Passes through the inguinal canal and over the bladder
- Moves sperm by peristalsis
- Spermatic cord – ductus deferens, blood vessels, and nerves in a connective tissue sheath
- Ends in the ejaculatory duct which unites with the urethra

- Vasectomy – cutting of the ductus deferens at the level of the testes to prevent transportation of sperm
- Extends from the base of the urinary bladder to the tip of the penis
- Carries both urine and sperm
- Sperm enters from the ejaculatory duct
- Regions of the urethra
  - Prostatic urethra –surrounded by prostate
  - Membranous urethra – from prostatic urethra to penis
  - Spongy (penile) urethra – runs the length of the penis
- Located at the base of the bladder

#### Seminal Vesicles

- Produces a thick, yellowish secretion (60% of semen)
  - Fructose (sugar)
  - Vitamin C
  - Prostaglandins
  - Other substances that nourish and activate sperm

#### Prostate

- Encircles the upper part of the urethra
- Secretes a milky fluid
  - Helps to activate sperm
  - Enters the urethra through several small ducts

#### Bulbourethral Glands

- Pea-sized gland inferior to the prostate
- Produces a thick, clear mucus
  - Cleanses the urethra of acidic urine
  - Serves as a lubricant during sexual intercourse
  - Secreted into the penile urethra

#### Semen

- Mixture of sperm and accessory gland secretions
- Advantages of accessory gland secretions
  - Fructose provides energy for sperm cells
  - Alkalinity of semen helps neutralize the acidic environment of vagina
  - Semen inhibits bacterial multiplication
  - Elements of semen enhance sperm motility
- Scrotum
  - Divided sac of skin outside the abdomen
  - Maintains testes at 3°C lower than normal body temperature to protect sperm viability
- Penis
  - Delivers sperm into the female reproductive tract
  - Regions of the penis
    - Shaft
    - Glans penis (enlarged tip)
    - Prepuce (foreskin)

- Folded cuff of skin around proximal end
- Often removed by circumcision

## Female

- Ovaries
- Duct System
  - Uterine tubes (fallopian tubes)
  - Uterus
  - Vagina
- External genitalia

## Ovaries

- Composed of ovarian follicles (sac-like structures)
- Structure of an ovarian follicle
  - Oocyte
  - Follicular cells
- Primary follicle – contains an immature oocyte
- Graafian (vesicular) follicle – growing follicle with a maturing oocyte
- Ovulation – when the egg is mature the follicle ruptures
  - Occurs about every 28 days
- The ruptured follicle is transformed into a corpus luteum

## Fallopian Tubes

- Receive the ovulated oocyte
- Provide a site for fertilization
- Attaches to the uterus
- Does not physically attach to the ovary
- Supported by the broad ligament
- Fimbriae – finger-like projections at the distal end that receive the oocyte
- Cilia inside the uterine tube slowly move the oocyte towards the uterus (takes 3–4 days)
- Fertilization occurs inside the uterine tube

## Uterus

- Located between the urinary bladder and rectum
- Hollow organ
- Functions of the uterus
  - Receives a fertilized egg
  - Retains the fertilized egg
  - Nourishes the fertilized egg

## Uterine Regions

- Body – main portion
- Fundus – area where uterine tube enters
- Cervix – narrow outlet that protrudes into the vagina

## Uterine Wall

- Endometrium
  - Inner layer

- Allows for implantation of a fertilized egg
- Sloughs off if no pregnancy occurs (menses)
- Myometrium – middle layer of smooth muscle
- Serous layer – outer visceral peritoneum

#### Vagina

- Extends from cervix to exterior of body
- Behind bladder and in front of rectum
- Serves as the birth canal
- Receives the penis during sexual intercourse
- Hymen – partially closes the vagina until it is ruptured

#### External Genitalia

- Mons pubis
  - Fatty area overlying the pubic symphysis
  - Covered with pubic hair after puberty
- Labia – skin folds
  - Labia majora
  - Labia minora
- Vestibule
  - Enclosed by labia majora
  - Contains opening of the urethra and the greater vestibular glands (produce mucus)
- Clitoris
  - Contains erectile tissue
  - Corresponds to the male penis

#### Mammary Glands

- Present in both sexes, but only function in females
  - Modified sweat glands
- Function is to produce milk
- Stimulated by sex hormones (mostly estrogens) to increase in size
- Areola – central pigmented area
- Nipple – protruding central area of areola
- Lobes – internal structures that radiate around nipple
- Alveolar glands – clusters of milk producing glands within lobules
- Lactiferous ducts – connect alveolar glands to nipple