Human Anatomy
Unit 3

MALE REPRODUCTIVE SYSTEM
Male Reproductive System

• Gonads = testes
  – primary organ responsible for sperm production
  – development/maintenance of secondary sex characteristics
• Gametes = sperm
Anatomy of the Testes

- Tunica albuginea
- Seminiferous tubules
  - highly coiled
  - sealed by the blood testis barrier
  - Site of sperm production
- located in testicular lobules
Anatomy of the Testes
Histology of the Testes

- Interstitial cells of Leydig
  - Interstitial endocrinocytes
  - Located between seminiferous tubules
  - Testosterone

- Sertoli cells
  - Nursing cells or sustentacular cells
  - Form the blood testis barrier
  - Support sperm development
Development of Sperm

- Sperm formed by two processes
  - meiosis
    - Cell division resulting in cells with genetically varied cells with only one complete set of DNA (remember...our cells have two complete sets!)
  - spermatogenesis
    - morphological changes as sperm develop in tubule system
    - 64 days in humans
- Can survive 3 days in female reproductive tract
Development of Sperm

(a) Spermiogenesis

Spermatid (week 1)
- Mitochondria
- Nucleus
- Golgi apparatus
- Acrosomal vesicle

Acrosomal cap

Acrosomal cap

Nucleus

Tail (55 μm)
- Fibrous sheath of flagellum
- Dense fibers
- Mitochondrial spiral

Middle piece (5 μm)
- Centrioles

Neck (1 μm)

Head (5 μm)

Acrosomal cap

Spermatozoon (week 5)
- Microtubules

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The Long and Winding Road...

- Seminiferous tubules →
- Rete testis →
- Epididymis →
- Vas deferens →
- Ejaculatory duct →
- Prostatic urethra →
- Membranous urethra →
- Penile urethra →
The Epididymis

- Sperm “swim school”
- Comma shaped organ that arches over the posterior and lateral side of the testis
- Stores spermatozoa until ejaculation or absorption
- Sperm stored for up to 2 weeks
Vas Deferens

- Extends from the epididymis
- Passes posterior to the urinary bladder
- Meets the spermatic blood vessels to become the spermatic cord
- Enters pelvis through the inguinal canal
- Ampullae of the vas
- Passes into the seminal vesicles to form the ejaculatory duct
Vas Deferens
Seminal Vesicles

- Bilateral
- Located on the posterior/inferior aspect of the urinary bladder
- Produce 60% of semen
Prostate

- Located inferior to the urinary bladder
- Surrounds the prostatic urethra
- Size and shape of a chestnut
- Secretes about 1/3 of semen
Bulbourethral (Cowper’s) Gland

- Located inferior to the prostate and superior to the penis
- Secretes an alkaline substance prior to ejaculation
- Neutralizes acid from urine
Penis

- **Erectile tissue**
  - cavernous tissue that becomes engorged with blood during erection

- **Corpus spongiosum**
  - surrounds the penile urethra

- **Corpora cavernosa (2)**
  - located on the dorsal aspect of the penis
Penis

- **Glans**
  - enlarged tip of the penis

- **Prepuce**
  - cuff of loose skin that covers the glans
  - removed during circumcision
Scrotum

- Thin sac of skin
  - superficial fascia and smooth muscle
  - dartos
  - holds the testes outside of the body
- Reduced temperature aids in development of sperm
Cremaster Muscle

- Skeletal muscle fibers extending from the internal oblique muscle
- Responsible for elevating the testis
Tunica of the Testis

- Tunica vaginalis
  - outpouching of the peritoneal cavity
  - a serous sac
- Tunica albuginea
  - the fibrous capsule of the testes