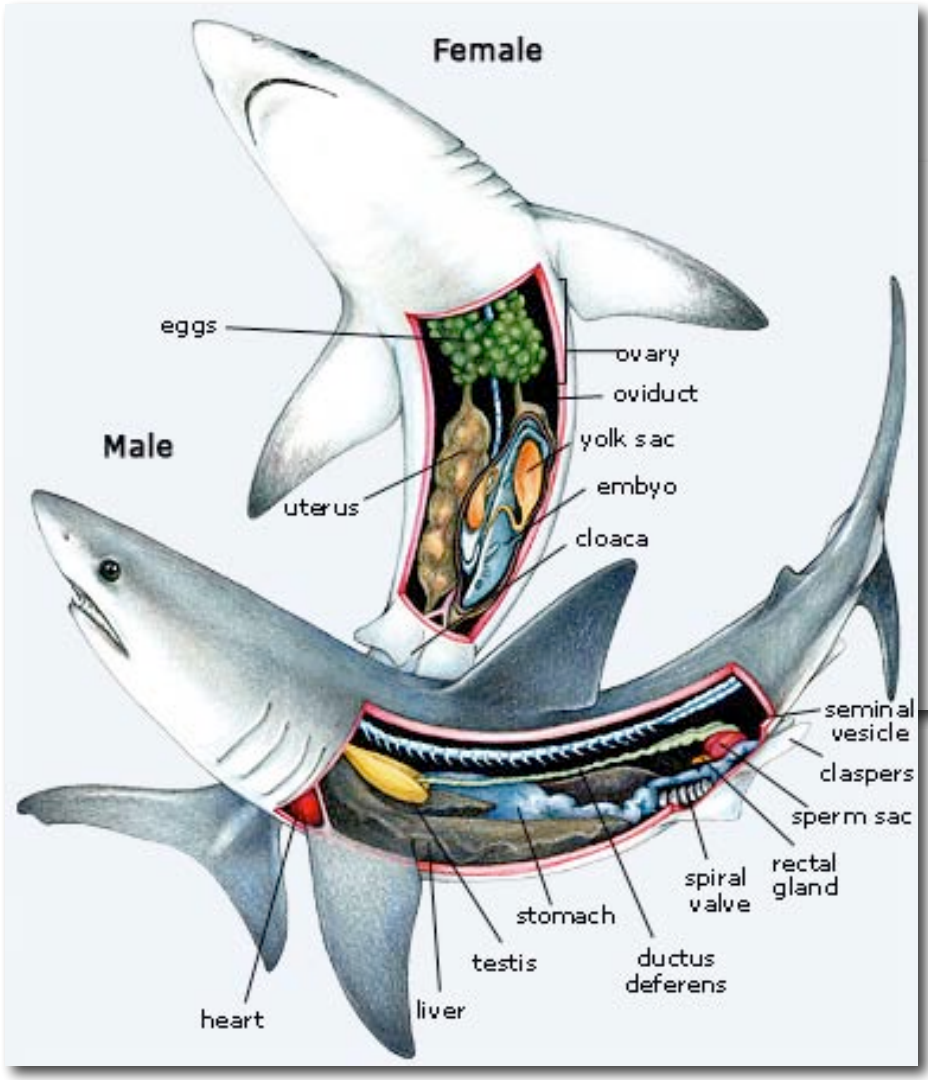
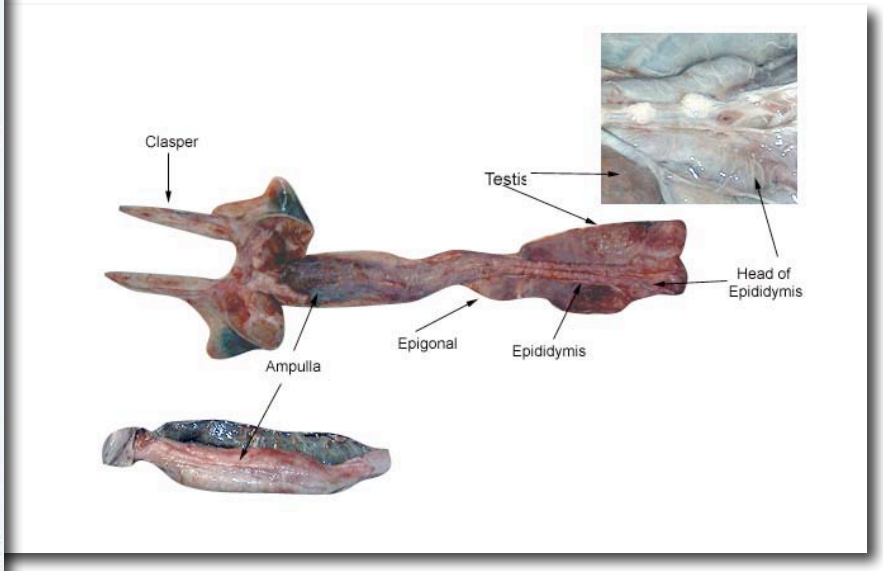
Male Anatomy

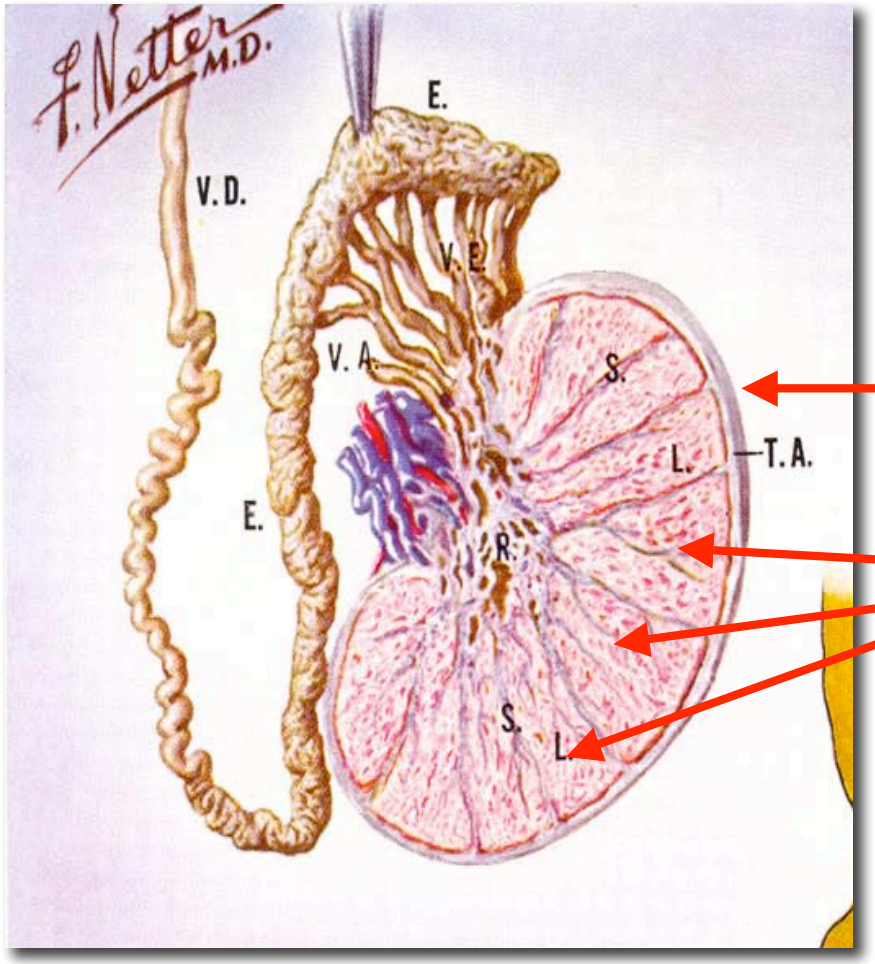




Male Anatomy

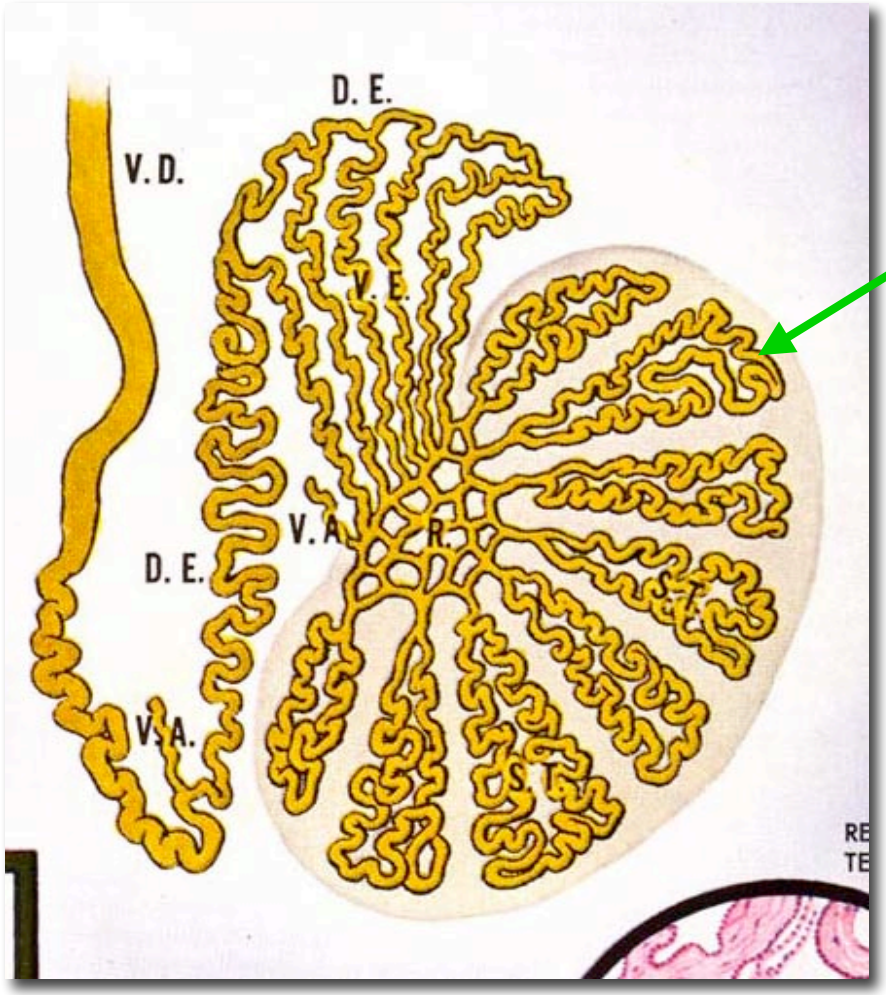
- Primary Organ
  - testes, genetically determined in mammals
  - testis releases hormones that then control the development of secondary sex characteristics
- Secondary Organs
  - internal duct system
    - e.g., vas deferens, epididymus
  - external genitalia
- Secondary Sexual Characters
  - e.g., antlers, coloration, facial hair

Eutherian Mammal Testes



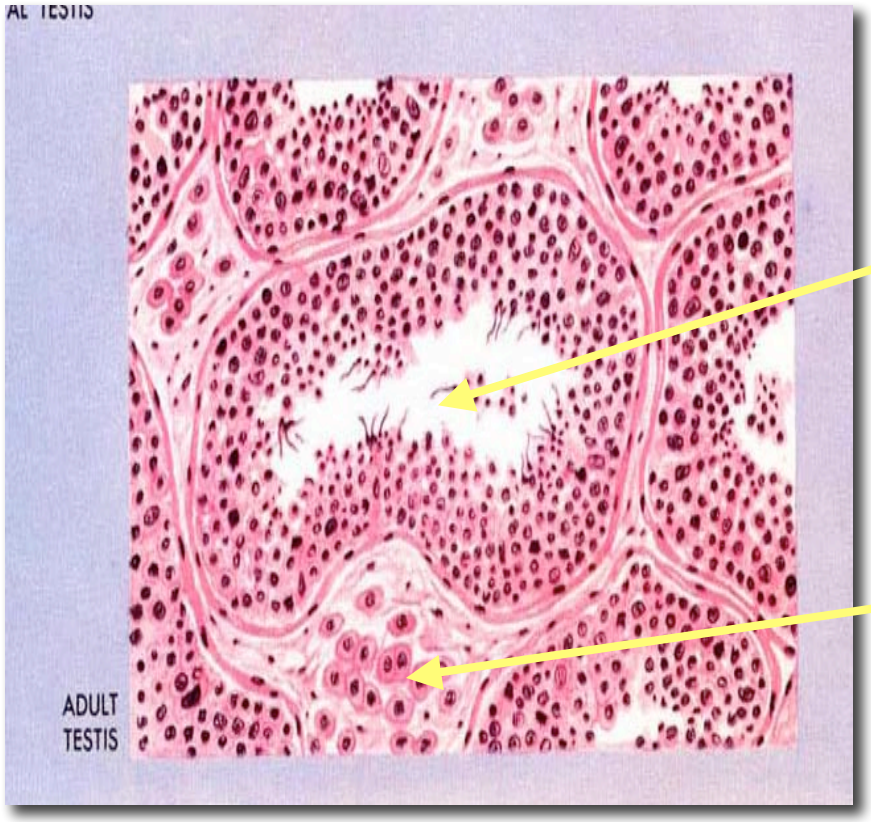
- Paired and oval shaped
- Shiny connective covering called the Tunica Albuginea
- Divided into testicular lobules
  - Approximately 250 in human testis

Seminiferous tubules (ST)



- Each testicular lobule contains several coiled seminiferous tubules (ST)
  - ST site of sperm production
- Each ST ~ 1.3 ft in humans
- Total length of ST almost the length of a football field

Testicular Histology



Testis is made up of 2 major compartments

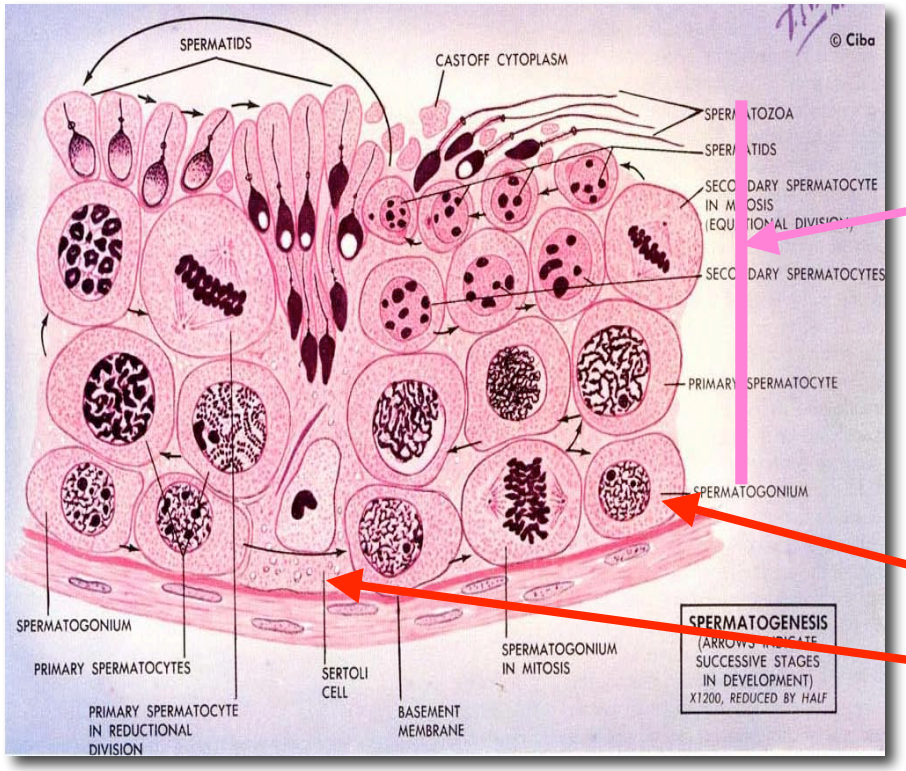
1) Region inside seminiferous tubules

   Spermatozoa development

2) Interstitial space outside ST

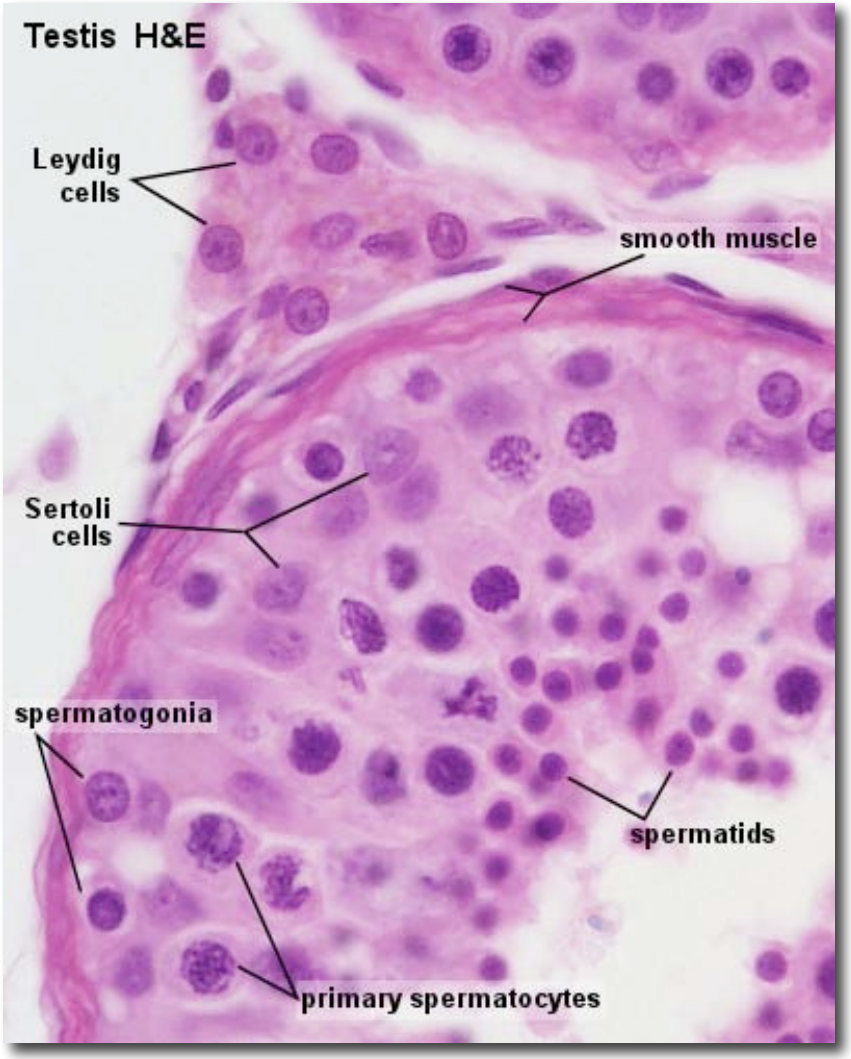
   - Leydig cells,
   - Androgen Production

Seminiferous Tubules



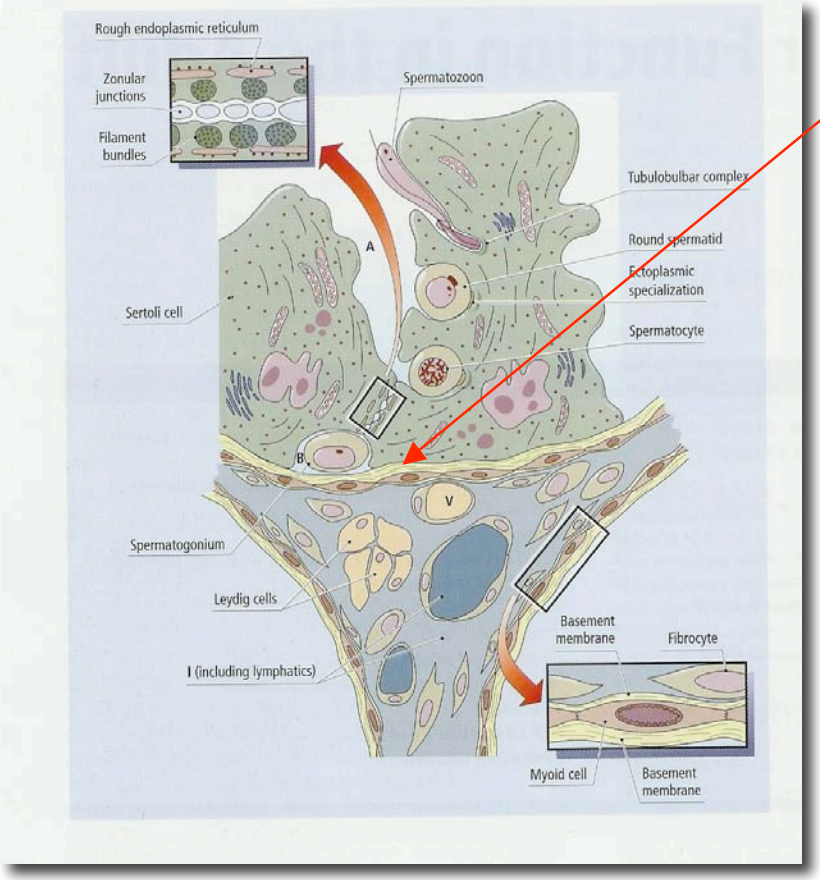
- Seminiferous tubules are lined by a <u>germinal epithelium</u>
- Primary product is spermatozoa
- Two cell types are found within ST
  - Germ cells
  - Sertoli cells

Interstitial space



- Outside the ST
- Leydig cells
  - Responsible for androgen production in response to LH

Blood testis barrier



Limits fluid transfer between adluminal and basal and interstitial compartments

Prevents gametes entering interstitial space

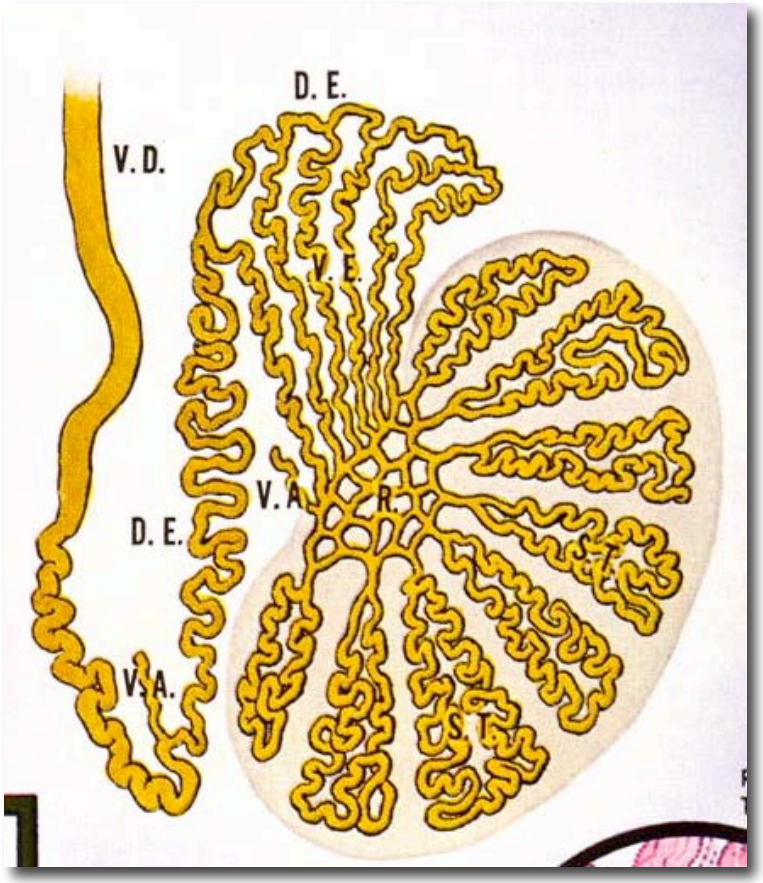
Blood testis barrier 2

- The two compartments are separated by a blood testis barrier
  - Consists of a series of gap and tight junctions that serve as a physiological barrier separating the sertoli cells from the capillaries located in the interstitial space.
  - **Function**: prevents immune response to "foreign" protein of gametes
    - Sperm granuloma

Ducts in males

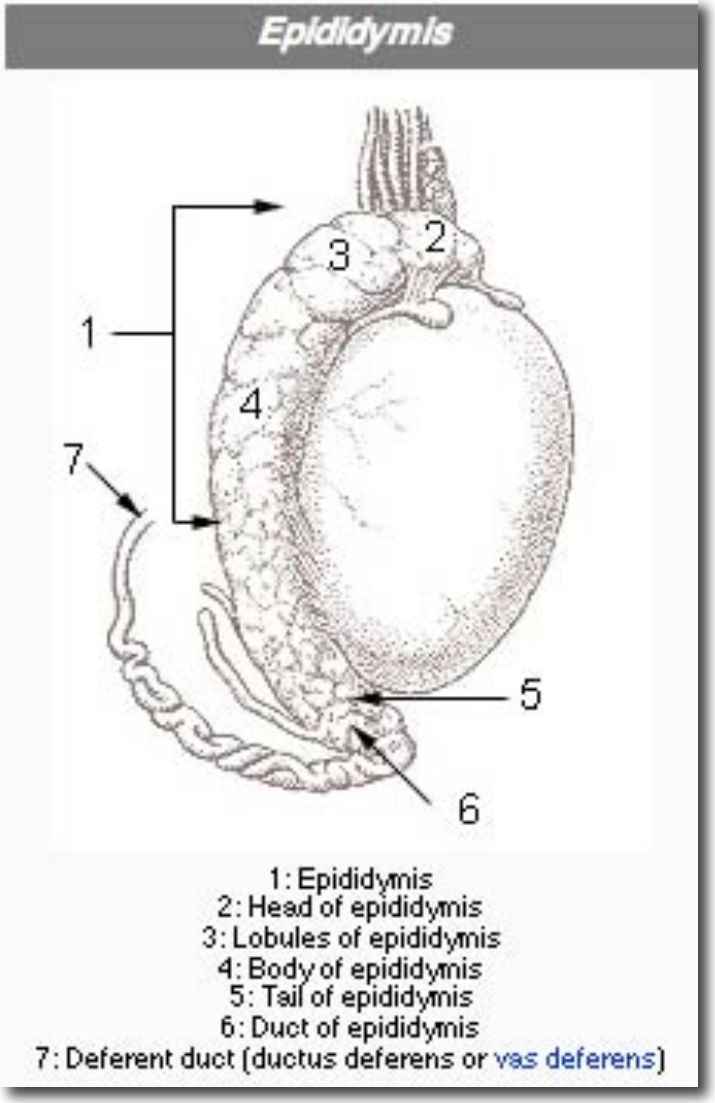
- All ducts in human **males** are derived from the primitive kidney
  - termed the **Wolffian ducts**
    - **(or archinephric duct)**

Ducts in males



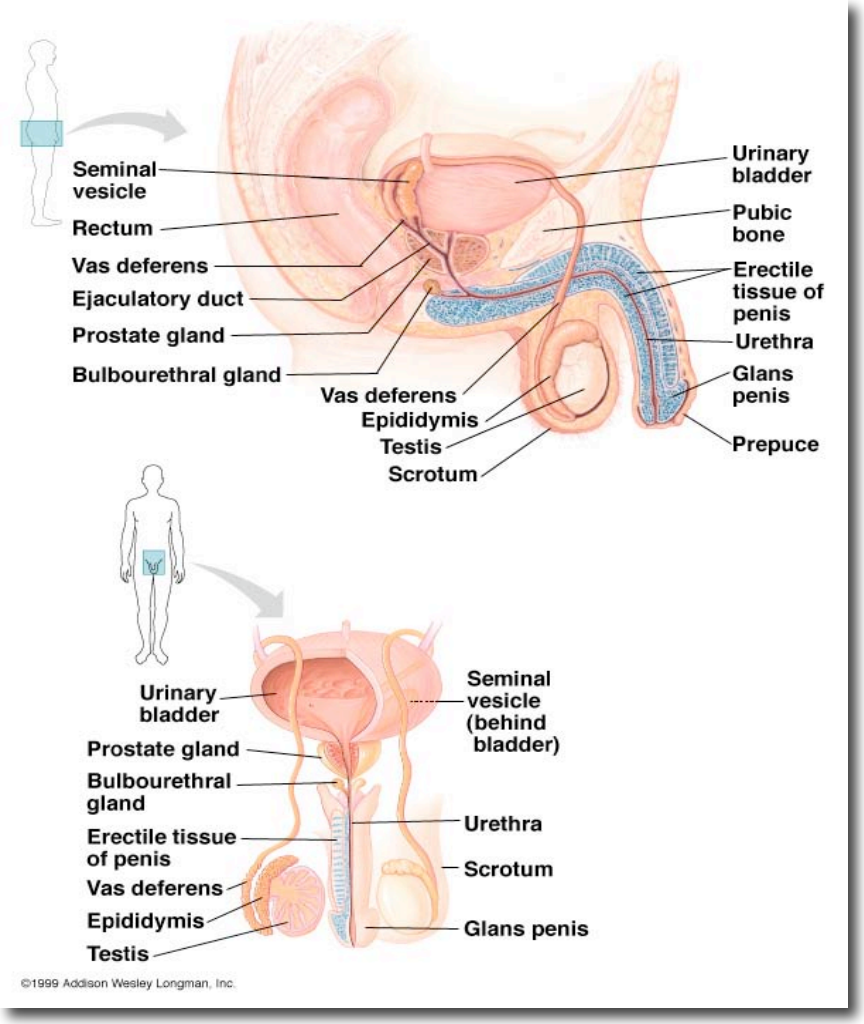
1) **Seminiferous tubules** –
2) **Tubuli recti** (straight tubules)
3) **Rete testis**- branched network of ducts
4) **Vasa efferentia**- carry to single common duct
5) **Epididymis**- single duct (>15 ft in human male)
6) **Vas deferens** pass out scrotum through inguinal canal to the urethra.

Epididymis



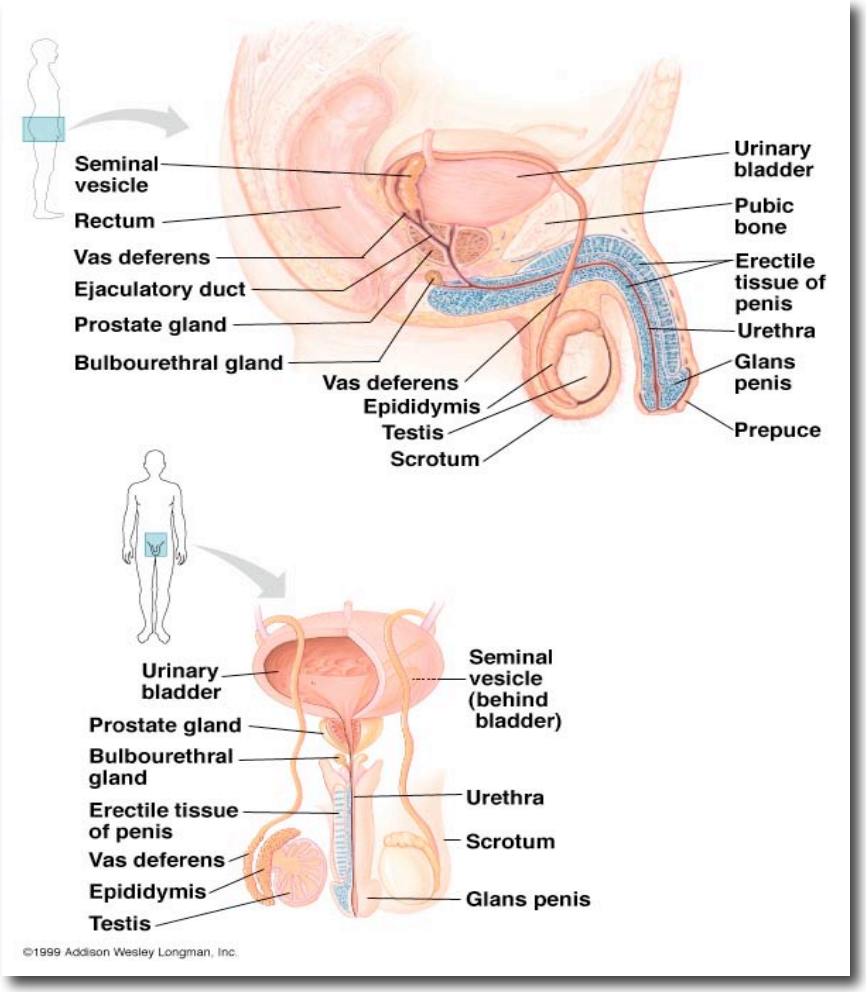
- Store sperm
- Maturation of sperm

Accessory Glands



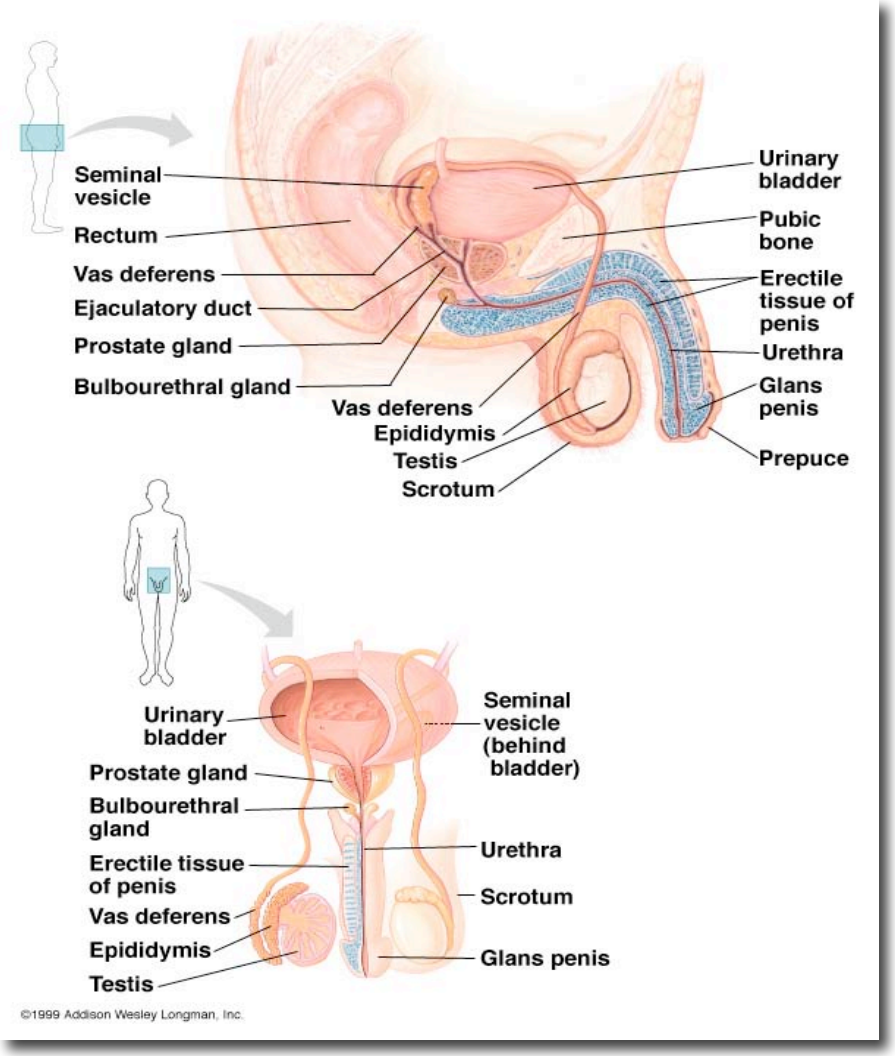
- Seminal Vessicles
- Prostate gland
- Bulbourethral glands
- Involved in the production of semen

Seminal Vesicles



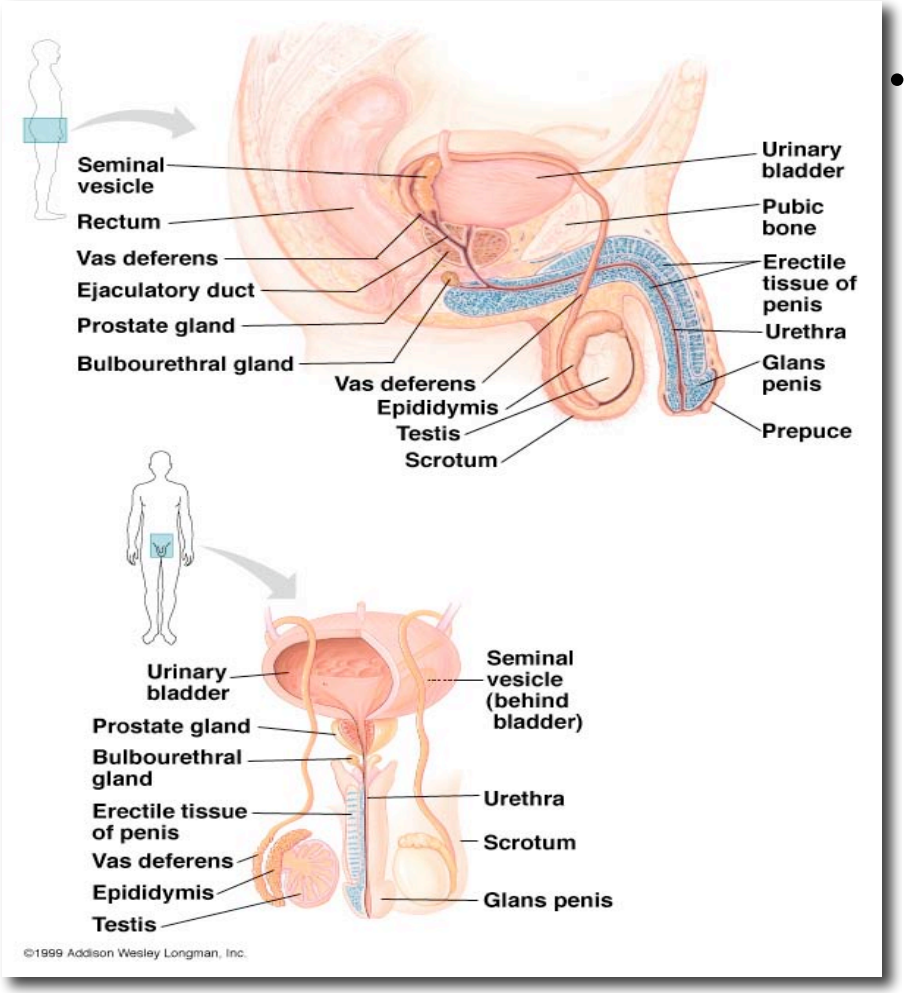
- Secrete alkaline, viscous fluid
- High fructose content
- Comprises the majority of semen

Prostate Gland



- Adds an alkaline solution to semen
- Facilitates a favorable environment for sperm in the more acidic vagina and female reproductive tract
- 13-33% of semen

Bulbourethral Glands



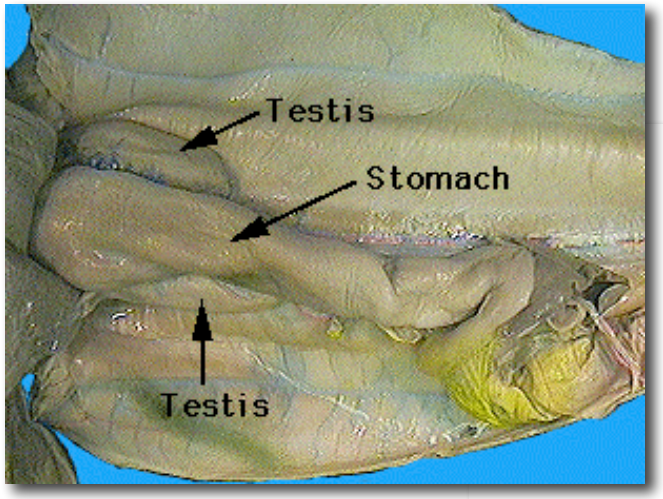
- Secrete lubricant

Function of Ducts and Accessory Glands

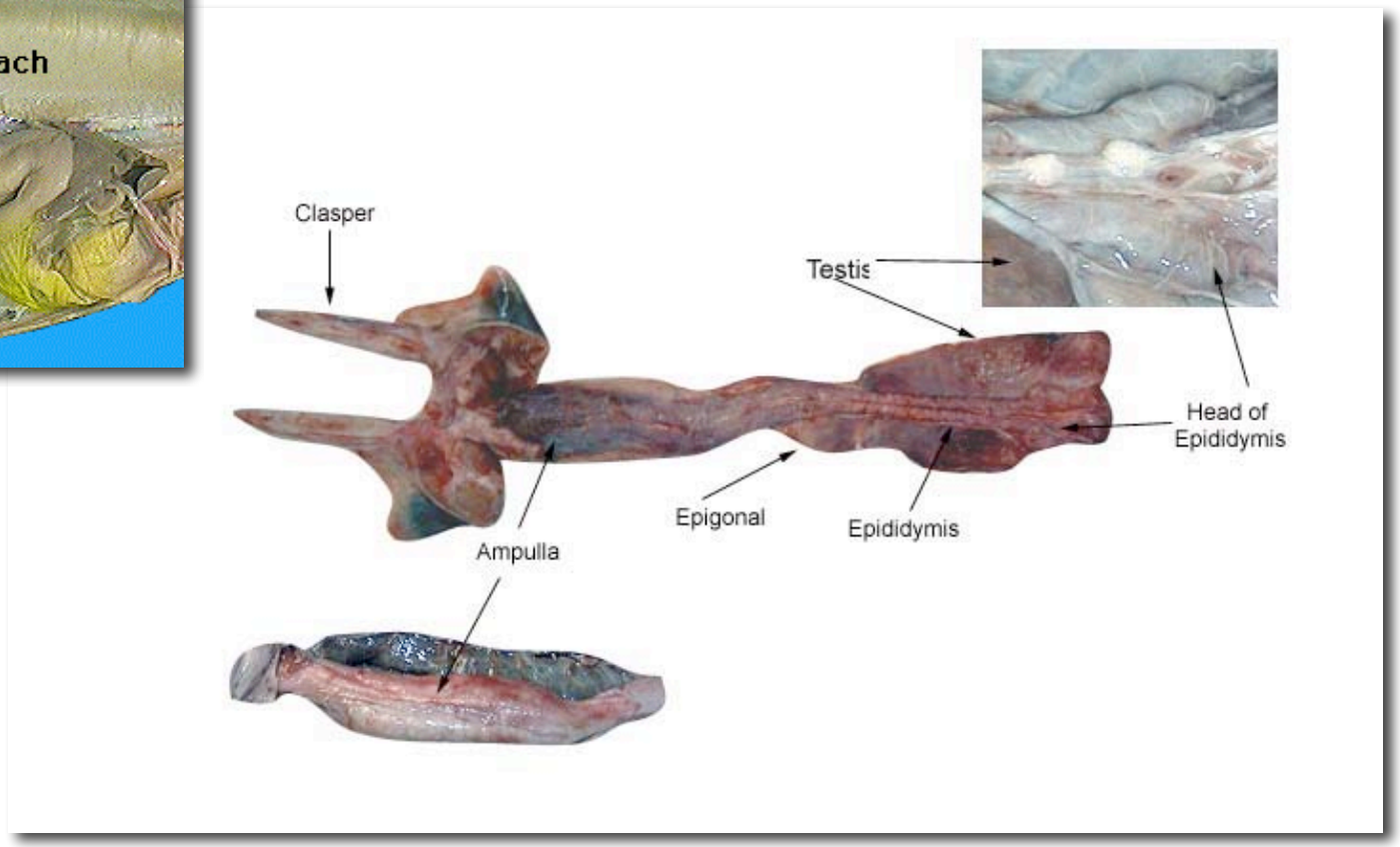
- Sperm transport
- Sperm Storage
- Sperm maturation
- Production of semen

Comparative testis anatomy

- Paired (embryologically) in all species
  - Can be fused



Shark



Comparative testis anatomy

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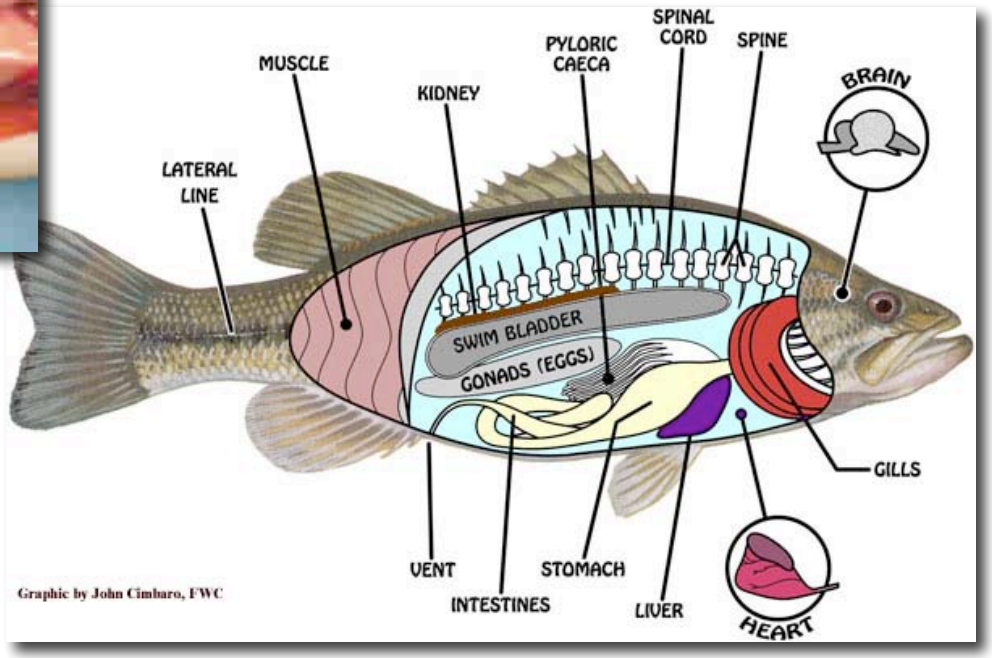
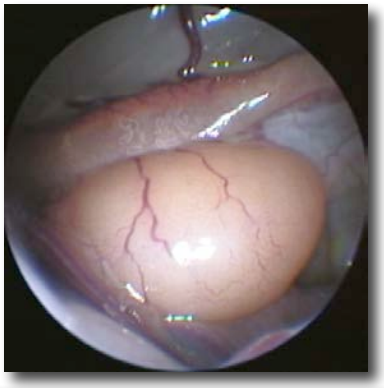


Birds - Ducts



- sperm leave testes and enter epididymis
  - very small in the bird
  - not divided into three parts like mammals
- then enter the ductus deferens
  - long narrow tube travels next to the ureter
  - ends at cloaca
- psittacines (parrots)
  - sperm storage in the ductus deferens
- passerines (finches, canaries, etc.)
  - sperm stored in the "seminal glomus"
  - convoluted structure at the end of the ductus