

Male Reproduction

ANSC 1000
Introductory Animal Science

Components of Sexual Reproduction

- Female
 - Must be willing to accept services of the male ([copulation](#)) near a time when the egg ([ovum](#)) is released from the ovary ([ovulation](#))

Components of Sexual Reproduction

- Male
 - ▶ Must be willing (**libido**) and able to service the female. He must deliver (**ejaculation**) viable spermatozoa to the proper site in the female reproductive tract at a proper time for conception to occur.
 - ◆ (**Conception** = union of the male and female gametes.)

Components of Sexual Reproduction

- Distinct anatomical and function differences between male and female reproductive systems:
 - ▶ Male
 - ◆ Development of gamete is a continuous process resulting in an infinite number of sperm
 - ▶ Female
 - ◆ Development of gamete is a cyclic process.
 - ◆ Finite number of gametes formed

Anatomy of the MALE Reproductive System

Brief description and comparison of male farm animals

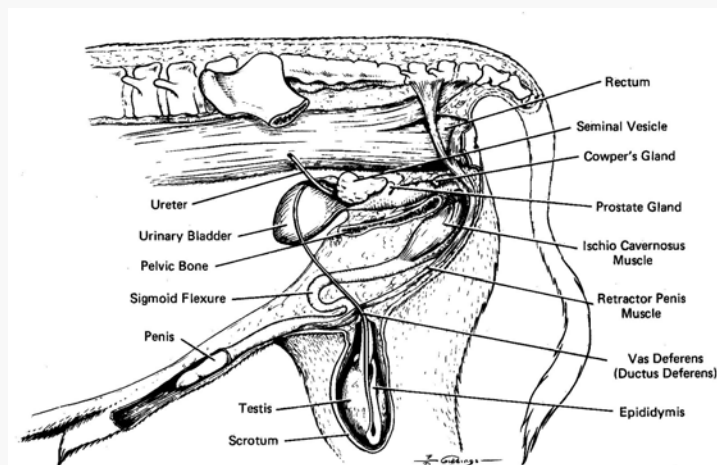


FIGURE 10.8 Reproductive organs of the bull. Drawing by Dennis Giddings.

Testis (gonad)

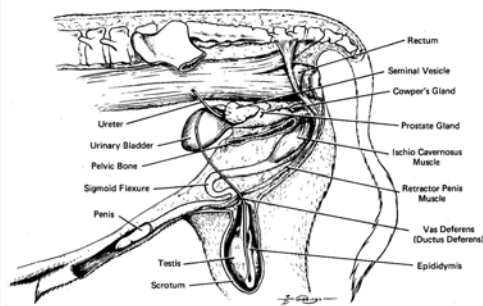


FIGURE 10.8 Reproductive organs of the bull. Drawing by Dennis Giddings.

- Primary sex organ
- Produces
 - 1.
 - 2.
- Two in number
 - ▶ Monorchid –
 - ▶ Cryptorchid –

- Castrate - remove before puberty
- Castrate after puberty = stag

Scrotum

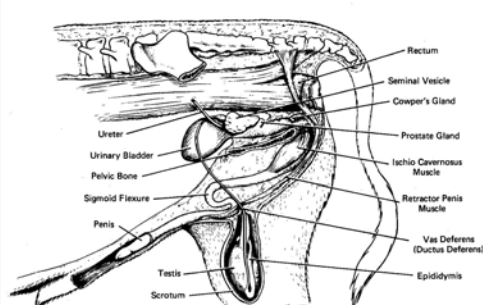
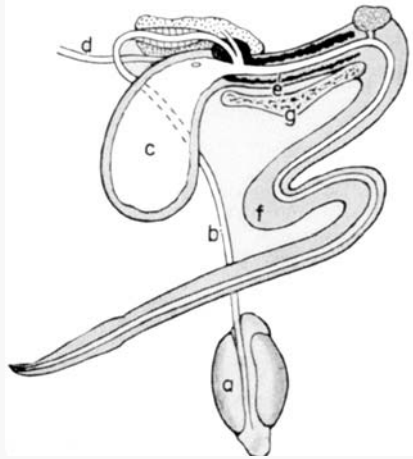


FIGURE 10.8 Reproductive organs of the bull. Drawing by Dennis Giddings.

- 1.
 - 2.
 - 3.
- ▶ Spermatogenesis and body temperature...

Species Comparison of Testes

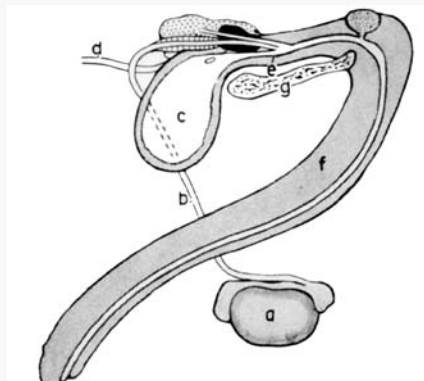
Bull & Ram



- Lie in **vertical** plane
- Side-by-side
- Pendulous
- Between rear legs
- In scrotum

Species Comparison of Testes

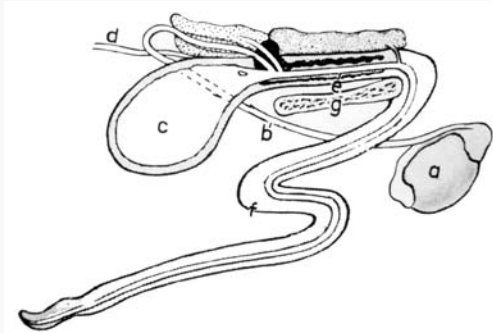
Stallion



- **Horizontal** plane
- Side-by-side
- Pendulous
- Between rear legs
- In scrotum

Species Comparison of Testes

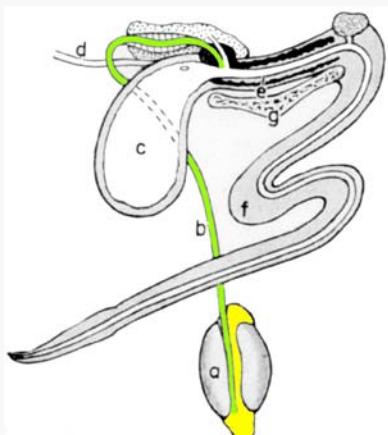
Boar



- Posterior to hams
- Ventral to anus
- Oblique angle
- In scrotum

Parts of male system and functions

Epididymis (Yellow)

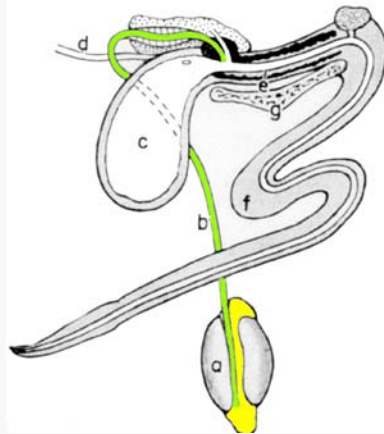


- Location
- Three parts
- Functions

[*Spermatogenesis - from start to maturity - takes ~ 40-60 days, depending on species*]

Parts of male system and functions

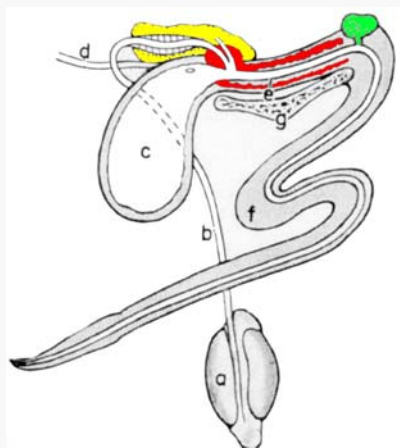
Vas deferens (Green)



- Duct located..
- Function
- Sterilization

Parts of male system and functions

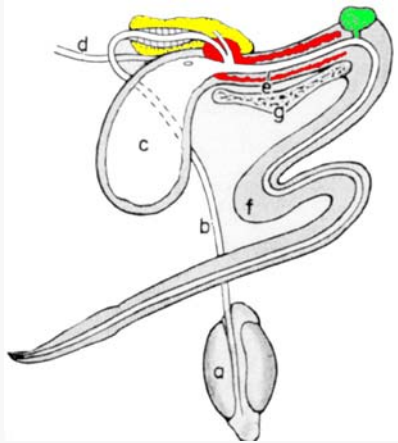
Accessory sex glands



- Purposes

Parts of male system and functions

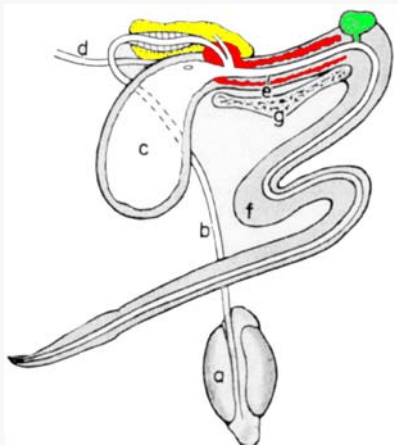
Accessory sex glands



- **Seminal vesicles**
- **Prostate gland**

Parts of male system and functions

Accessory sex glands



- **Bulbourethral gland**
(also called Cowper's gland)

Semen Production – Mature Males

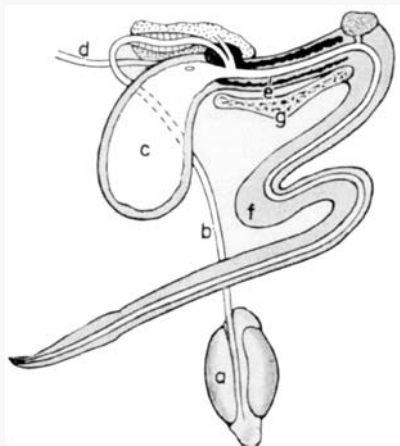
Table 10.3

	Ejaculate volume (ml)	Concentration rank
Ram		
Bull		
Stallion		
Boar		
Man		

Parts of male system and functions

Table 10.2

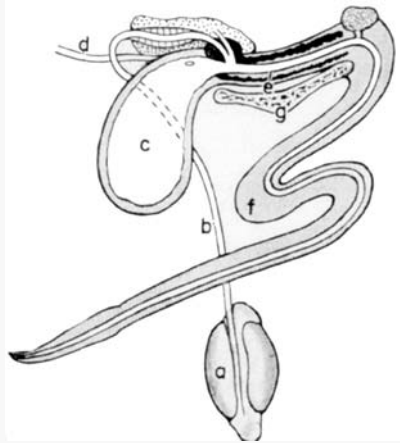
Penis



- Organ of copulation
- Transports...
- When non-erect...
 - ▶ bulls, rams, & boars
 - ▶ horses
- Tissue in inner portion

Parts of male system and functions

Penis (continued)



- Urethra
- Sigmoid flexure
 - S-shaped curve

Parts of male system and functions

Penis (continued)

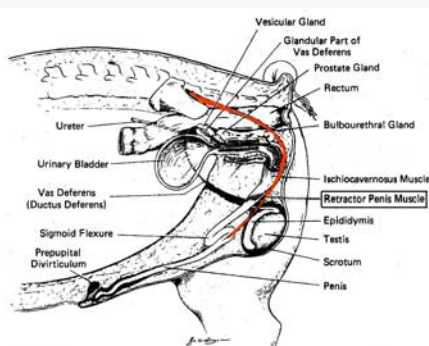
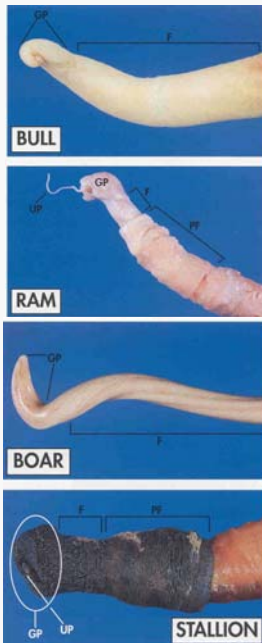


FIGURE 10.9 Reproductive organs of the boar. Drawing by Dennis Giddings.

- Retractor penis muscle
- Glans penis

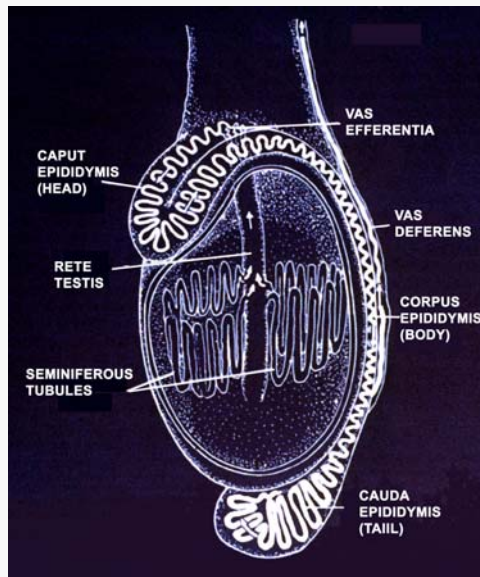
Parts of male system and functions



Glans Penis Types

- Bull
- Ram
- Boar
- Stallion

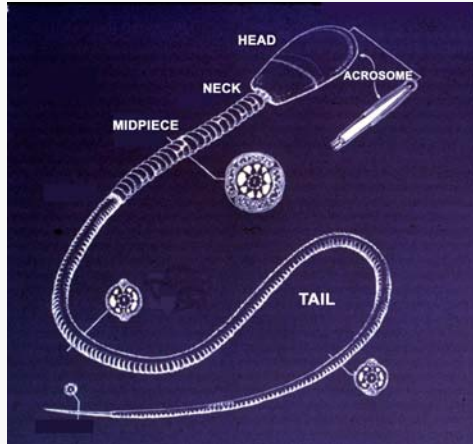
Sperm Production



- Seminiferous tubules
- Sertoli cells
- Leydig cells (*also called* interstitial cells)

Sperm

Fig. 10.10



- Head
 - Acrosome
- Neck
- Midpiece
- Tail

Reproductive Physiology (endocrinology) of the Male

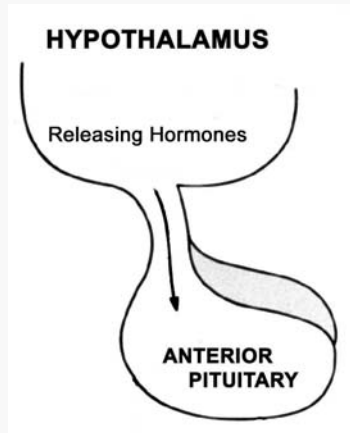
Brief introduction to endocrinology

- Proper function of cells and organs of the body is dependent on the action of hormones
 - ▶ Hormones are chemical substances produced by endocrine (ductless) glands located in different regions of the body which travel (blood, lymph, extracellular fluids) to target tissues where they have their effect.

Brief introduction to endocrinology (continued)

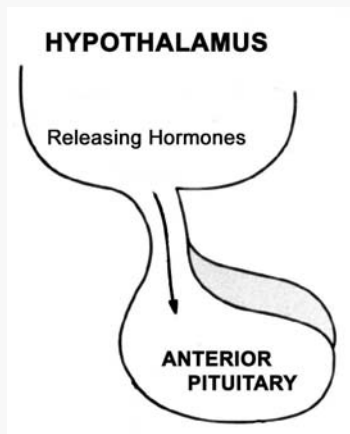
- Hormones (cont.)
 - ▶
 - ▶
 - ▶
 - ▶

Hypothalamus



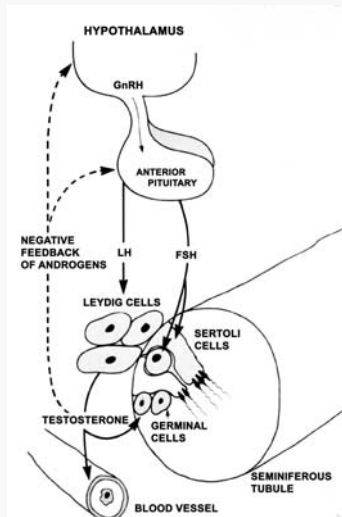
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Pituitary Gland



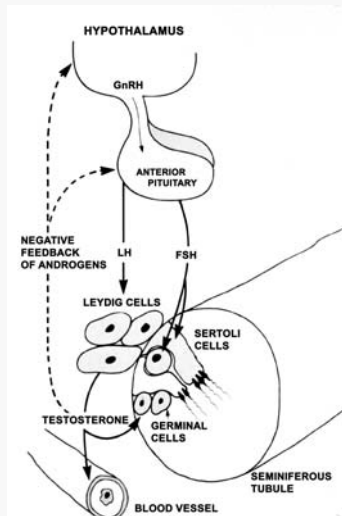
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Hormonal interrelationships in the male



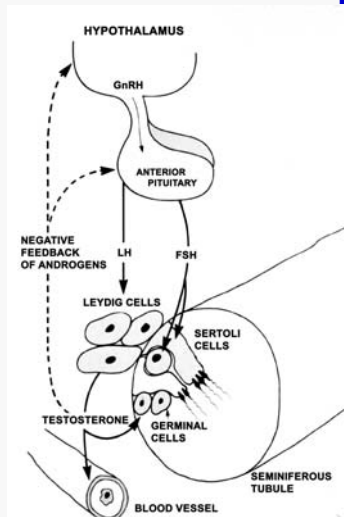
- GnRH =
- FSH =
- LH =
- FSH + LH =

Hormonal interrelationships in the male



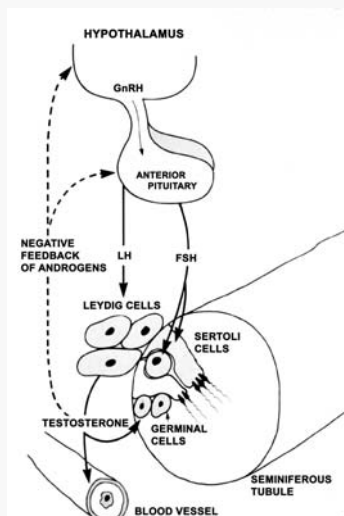
- Hypothalamus produces gonadotropic releasing hormone (GnRH)
- GnRH causes the anterior pituitary gland to release FSH and LH into blood
- FSH and LH go to the gonads where they stimulate specific functions
- Feedback mechanisms

Hormonal interrelationships in the male - LH



- LH
- Testosterone functions
 - ▶
 - ▶
 - ▶
 - ▶
 - ▶

Hormonal interrelationships in the male - FSH



- FSH

Before the breeding season... Breeding Soundness Examination (BSE)

- Visual evaluation



BSE (cont.)



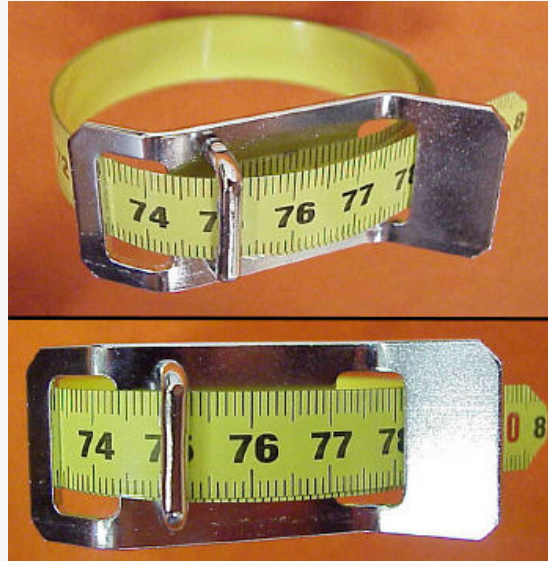
- Scrotal circumference



- Scrotal palpation



Scrotal Circumference Tape



BSE (cont.)



- Penis and prepuce observation
 - Infection, split, rupture

BSE (cont.)

- Rectal palpation
 - ▶
- Semen evaluation
 - ▶