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)

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

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

Scrotum

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**

<table>
<thead>
<tr>
<th></th>
<th>Ejaculate volume (ml)</th>
<th>Concentration rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ram</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bull</td>
<td></td>
<td></td>
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<tr>
<td>Stallion</td>
<td></td>
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</tr>
<tr>
<td>Boar</td>
<td></td>
<td></td>
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<tr>
<td>Man</td>
<td></td>
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</tbody>
</table>

### 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

- 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

Pituitary Gland
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
- Scrotal circumference
- Scrotal palpation
Scrotal Circumference Tape

BSE (cont.)

- Penis and prepuce observation
  - Infection, split, rupture
BSE (cont.)

- Rectal palpation

- Semen evaluation