

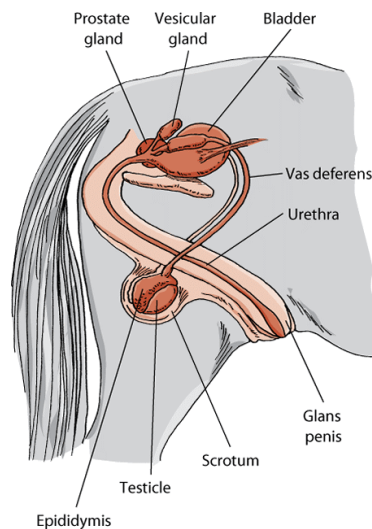
## Equine Reproductive System

The function of the reproductive system is production of sex hormones, mating, gestation, birth, and lactation.

### MALE SYSTEM

Purpose is to produce and deliver *sperm* (reproductive material) and to produce *testosterone* (male sex hormone).

### Anatomy



*Testes* – organs that produce sperm and testosterone, usually 2

- Testosterone is responsible for secondary sex characteristics (enlarged crest, deep voice) and influencing sexual behavior
- Castration or gelding is removal of testes, usually performed when male is a yearling, renders male infertile and removes source of testosterone

*Scrotum* – sac containing testes, located outside body to regulate temperature of testes

- By 12 months testes have descended into scrotum through *inguinal canal*, when one or more testes remain in canal or abdomen horse is referred to as *cryptorchid*

*Epididymis* – large duct outside the testes where sperm matures and is stored

*Vas deferens* – tube connecting epididymis to urethra

*Accessory sex glands* – 2 *seminal vesicular glands*, 2 *bulbourethral glands*, 1 *prostate*, add fluid to sperm to create *semen* which provides nutrients and protective environment when entering mare

*Urethra* – tube through penis allowing passage of semen and urine

*Penis* – organ for penetration of female reproductive system during mating, sensitive end that enlarges during mating is called *glans penis*

- Penis telescopes on itself within the sheath
- Oily substance *smegma* accumulates in sheath, urethra opening, and on penis requiring periodic cleaning

- Acepromazine, xylazine, detomidine, and romfidine can cause the penis to relax and hang from sheath

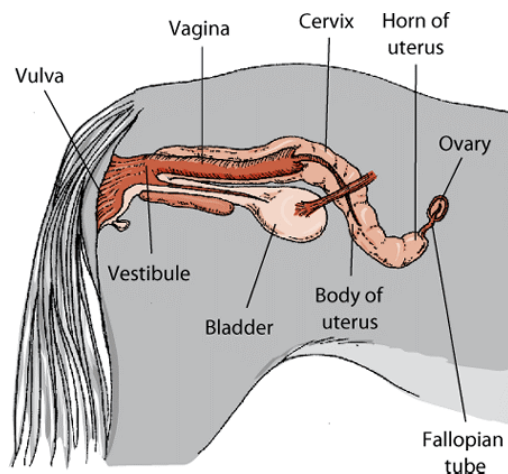
### Process during mating

Sperm leaves epididymis via vas deferens and is transported to urethra. Sperm mixes with fluids from accessory sex glands before entering urethra. Semen is then ejaculated from penis via urethra.

### FEMALE SYSTEM

Purpose is to produce *ovum* (egg, reproductive material) and, when fertilized, contain and nourish *embryo* during gestation (pregnancy) and parturition (birth). Also produces *estrogen* and *progesterone* (female sex hormones) and mammary system provides milk for foal.

### Anatomy



*Ovaries* – organs that produce ova, estrogen, and progesterone, 2 (R & L)

- Ovum are produced in protective *follicle*, once ovum is released during ovulation it becomes a *corpus luteum* or *yellow body*

*Fallopian tubes* – lead from ovaries to uterus

*Uterus* – organ where embryo grows during gestation, made of a large body and two horns

*Cervix* – end of uterus where it meets the vagina, remains tightly closed except during estrus

*Vagina* – canal leading from the uterus to the vulva, functions as birth canal during parturition

*Vulva* – external opening of the reproductive and urinary systems

### Estrus cycle

Pituitary gland releases *follicle-stimulating hormone (FSH)*. Ovary develops follicle. Ovary secretes estrogen which stimulates follicle to release ovum (ovulation) and stimulates estrus (receptive breeding behavior including interest in stallions, increased urination, white staining of vulva, winking of vulva, other behavioral changes). Corpus luteum secretes progesterone - if

mare is bred, continues throughout pregnancy; if not stops after a few days and cycle begins again.

Cycle averages 21-24 days but actual time of estrus when breeding possible is 3-5 days. Mares are *seasonally polyestrous* (many cycles in a season) and *anestrus* (do not cycle in winter). Seasonality of cycling is based on length of day as daylight stimulates FSH. Mares reach sexual maturity and begin cycling by 2 yrs but are usually not bred until more physically mature. Once a mare is bred, gestation lasts and average of 335 days.

#### DISEASES AFFECTING REPRODUCTIVE SYSTEM

Rhinopneumonitis – most common cause of infectious abortion in mares, can be transferred by placenta, placental fluids, or an aborted fetus by a mare

- Infected mares abort in the last trimester or foal dies a few days after birth
- Pregnant mares should be vaccinated with killed virus at 5, 7, and 9 months

Equine Viral Arteritis (EVA) – can be transmitted through breeding, virus is testosterone dependent so stallions can be carriers and transmit through semen

- Infected mares abort during 5-10 months
- Mares can pass virus onto foals through inhalation only if actively infected
- Vaccine can cause stallions to become seropositive (blood tests show antibodies to virus) making it difficult to tell if stallion was infected/is a carrier