Learning Objectives

• To be able to describe the female reproductive system in cattle.
  » Structure
  » Function

Equine - Horse

Bovine - Cattle

Ovine - Sheep
Porcine - Swine - Pig

Male → Boar
Female → Sow

Avian - Chicken

Male → Rooster
Female → Hen

Vulva
Vagina
Cervix
Uterine Body
Bladder
Uterine Horn
Ovary
Oviduct

Broader Ligament

- connective tissue sheet which supports and suspends the reproductive tract
BL - Broad Ligament
UH - Uterine Horn
O - Ovary
OD - Oviduct
Ovary - Primary Sex Organ

- **Functions**
  - **Hormonal**
    - Estrogen
    - Progesterone
  - **Female gamete**
    - Oocyte

Ovary

- Follicle - Estrogen, Oocyte
- Corpus Luteum - Progesterone

Ovary

- Germinal Epithelium
- 85% of Ovarian Cancers
- Medulla
- Tunica Albuginea
- Cortex
- Blood and lymphatic vessels & nerves
- Hilus

Ruptured follicle (ovulation)

- Tertiary follicle
- Primary follicle
- Egg nest
- Atretic follicle
- Secondary follicle
Primordial Follicle
- Flattened cells surround oocyte

Primary Follicle
- Increase in size of oocyte and height of follicular cells

Secondary follicle
- Surrounded by several layers of follicular cells

Tertiary follicle
- Follicle forms a fluid filled cavity
- Differentiation of cell layers in the follicle wall

Tertiary Follicle
- Ovarian follicle
- Granulosa
- Theca interna
- basement membrane
- Follicular blood supply
- Capillary network
- Granulosa cells
**Secondary Sex Organ:** A Series of Tubes to Convey the Oocyte/Embryo/Fetus to the Outside

- **Serosa**
- **Submucosa**
- **Lumen**
- **Mucosa**
- **Muscularis**
- **Circular smooth muscle layer**
- **Longitudinal smooth muscle layer**

**Oviduct**
- **Ampulla**
- **Mesosalpinx**
- **Isthmus**
- **Infundibulum (20 - 30 cm²)**
- **Uterine Horn**
- **Ostium**
- **Fimbria**
- **Ovary**
- **Follicle**

**Oviduct Histology**
- Mucosa
  - Ciliated Columnar
  - Nonciliated Columnar

**Functions of Oviduct**
- **Gamete Transport**
  - Sperm
  - Oocyte
- **Supports early embryo development**
- **Transport of embryo to uterus**

**Functions of the Uterus**
- **Muscle contractions**
  - Transport sperm
  - Expel fetus and placenta
- **Absorption and phagocytosis**
- **Partially prepares sperm for fertilization**
  - Capacitation
- **Provides environment for embryo and fetal growth**
- **Hormone production**
  - Prostaglandin $F_{2\alpha}$ production
**Uterus (bovine)**

- **Bicornuate**
  - poorly to moderately developed uterine horns
  - uterine body
  - one cervix

**Uterine Histology**

- Perimetrium
- Endometrium
- Myometrium
- Endometrial Glands

**Functions of the Cervix**

- Transport of sperm
- Barrier to sperm (species dependent)
- Reservoir for sperm
- Blocking bacterial invasion during pregnancy
- Birth canal

**COW**

- Cervix is composed of thick connective tissue
- Mucus is secreted near the time of breeding and ovulation.
- Cow has 4-5 annular rings
- External Cervical Os
- Internal Cervical Os
**Functions of the Vagina**

- Copulatory organ
- Glands secrete lubrication
- Birth canal
- Glands secrete pheromones

**Function of External Genitalia**

- Labia
  - Closes entrance to vagina
- Clitoris
  - Female sensory organ

**Posterior Vaginal Histology**

- Stratified Squamous Epithelium
- Mucosa
- Submucosa
Phenomena For Fertility

- vagina dentata - a vagina with teeth
- female bedbug - no vagina
- hysterectomy - if woman went to long without becoming pregnant then uterus would wonder in body causing hysteria and other distresses
- hyena - clitoris is very large and looks like the male penis; female also has a false scrotum (labia); female is the dominate sex and produces more testosterone than male