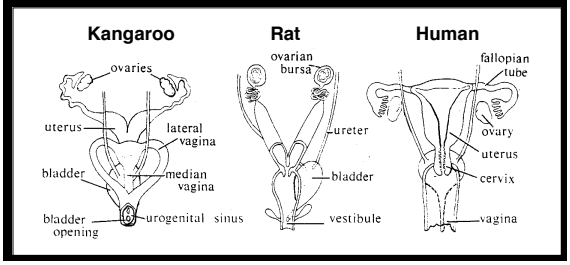
Animal/Dairy Science 434

Lec 2:

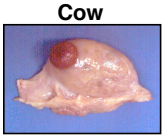
Female comparative anatomy;

History of Reproductive Physiology



Ovarian Differences

Cow



Mare



Sow



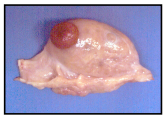
Cow, Sow, Ewe, Human

- Cortex on outside
- Ovulation can occur on any point of the ovary

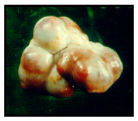
Mare

- Inversion of the cortex and medulla.
- Ovulation occurs at the Ovulation Fossa

Cow

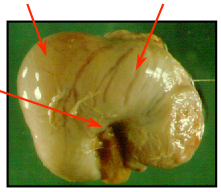


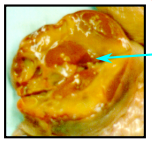
Sow



Preovulatory Tertiary Follicle

Blood vessels and connective tissue in medulla

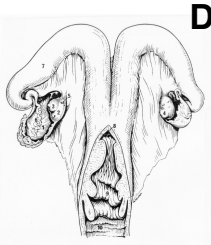




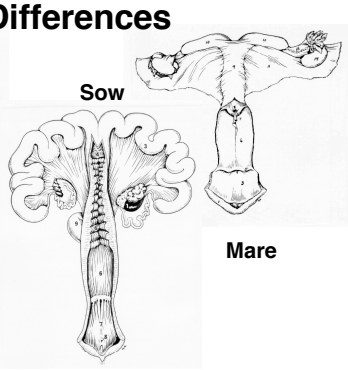
Internal CL

Mare

Uterine and Cervical Differences



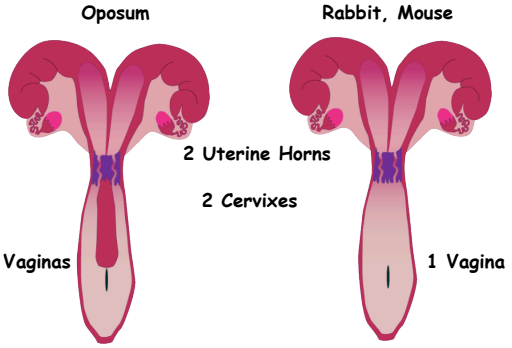
Cow



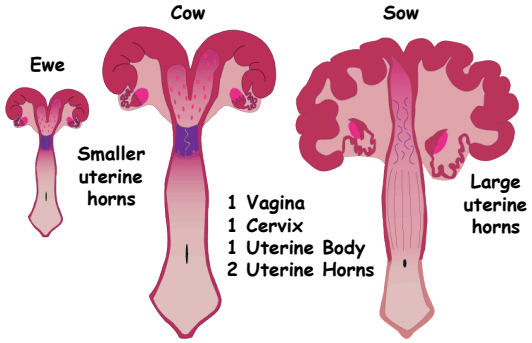
Sow

Mare

Duplex

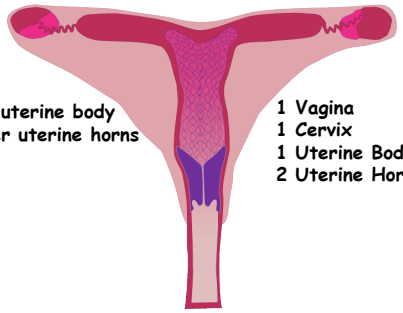


Bicornuate



Bicornuate

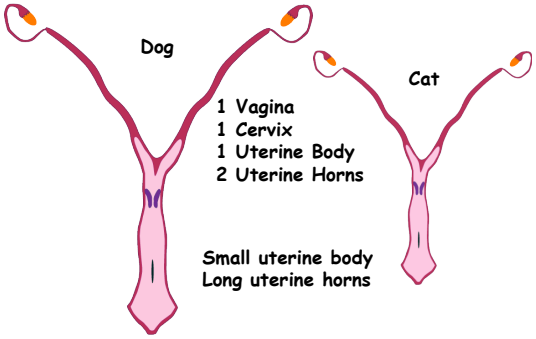
Mare



Large uterine body
Smaller uterine horns

1 Vagina
1 Cervix
1 Uterine Body
2 Uterine Horns

Bicornuate

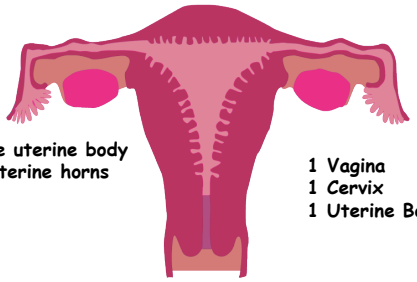


1 Vagina
1 Cervix
1 Uterine Body
2 Uterine Horns

Small uterine body
Long uterine horns

Simplex

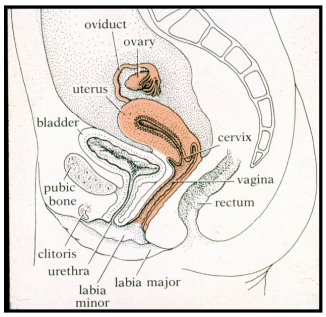
Woman



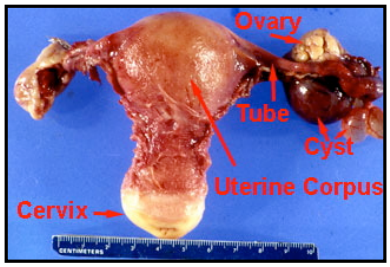
Large uterine body
No uterine horns

1 Vagina
1 Cervix
1 Uterine Body

Human Tract

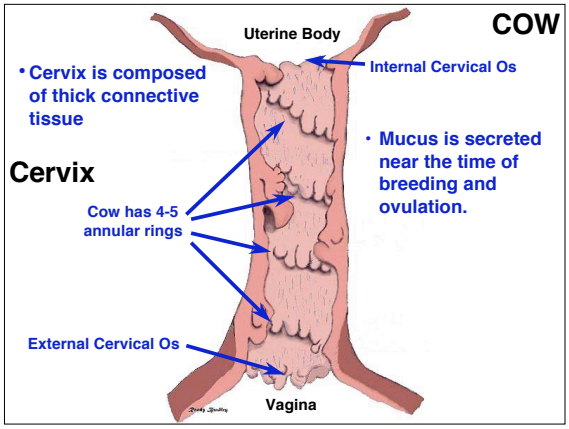


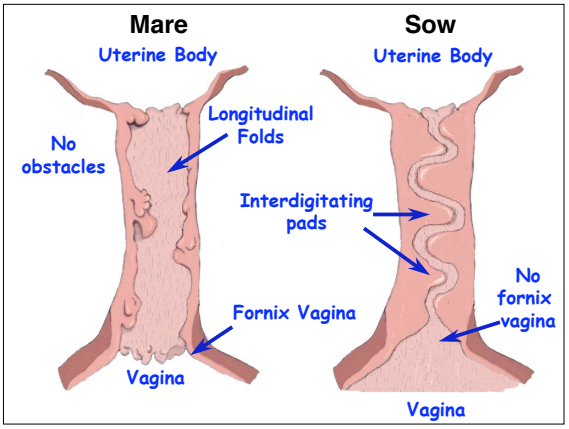
Human Tract

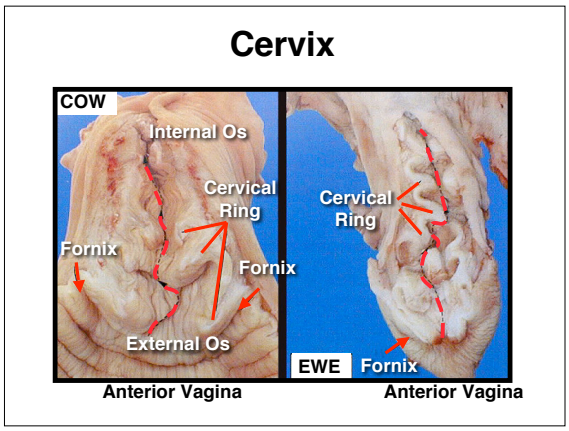


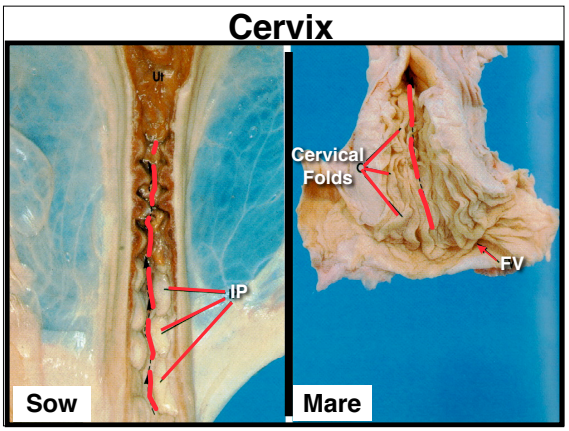


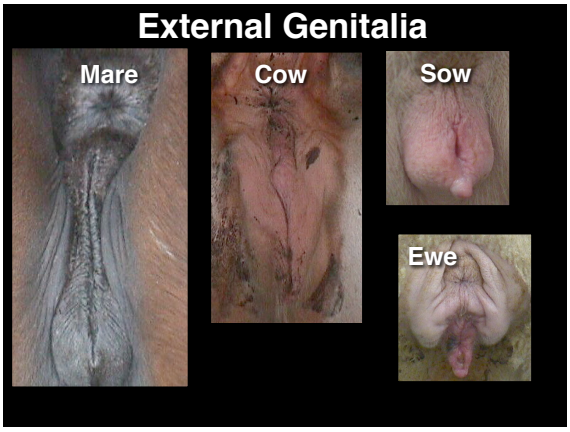
A 47-year old woman underwent a hysterectomy for excessively heavy menses. She had previously had four normal deliveries. This structure was removed, what is wrong?

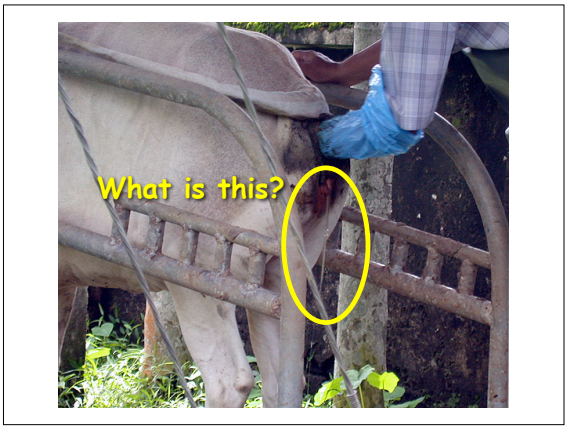

COW
Uterine Body
Internal Cervical Os
• Cervix is composed of thick connective tissue
Cervix
• Mucus is secreted near the time of breeding and ovulation.
Cow has 4-5 annular rings
External Cervical Os
Vagina


Mare
Uterine Body
No obstacles
Longitudinal Folds
Fornix Vagina
Vagina
Sow
Uterine Body
Interdigitating pads
No fornix vagina
Vagina

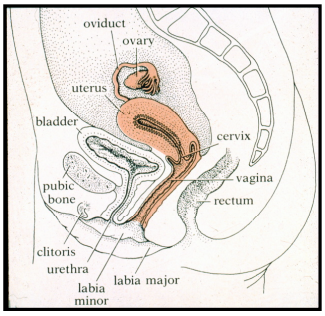

Cervix
COW
Internal Os
Cervical Ring
Fornix
Fornix
External Os
Cervical Ring
EWE
Fornix
Anterior Vagina
Anterior Vagina


Cervix
Ut
IP
Sow
Cervical Folds
FV
Mare


External Genitalia
Mare
Cow
Sow
Ewe


What is this?

Human Tract



External Genitalia

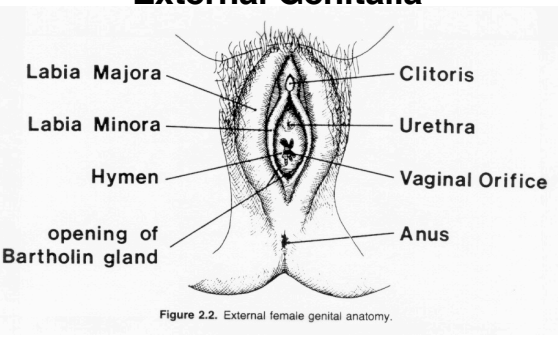
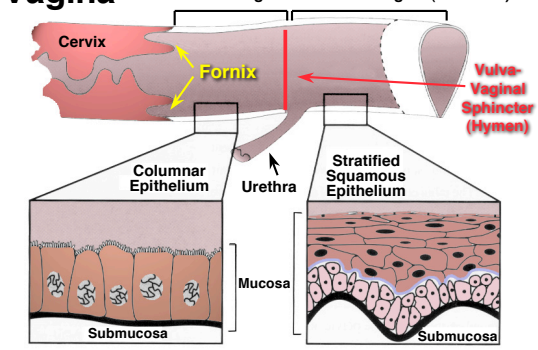
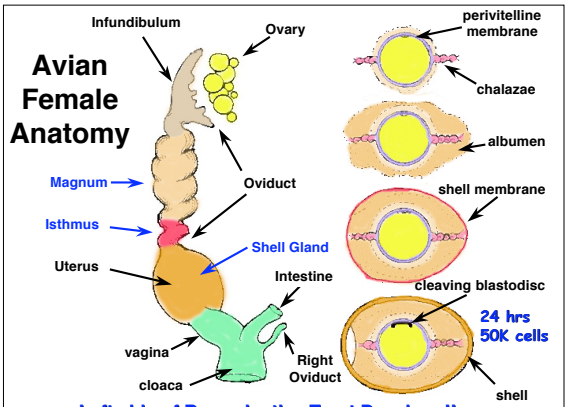


Figure 2.2. External female genital anatomy.

Vagina

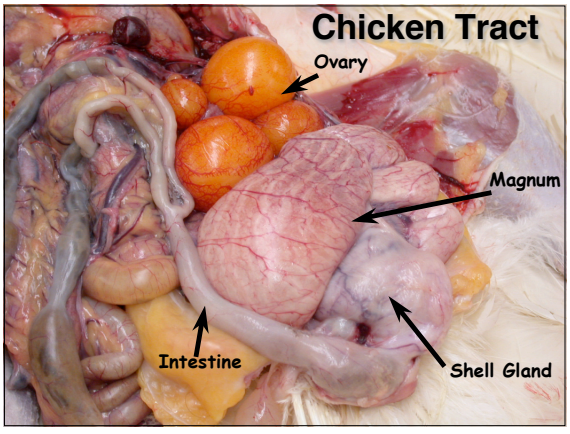


Avian Female Anatomy

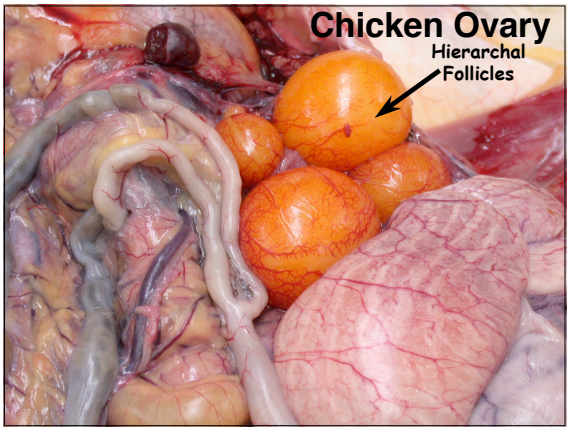


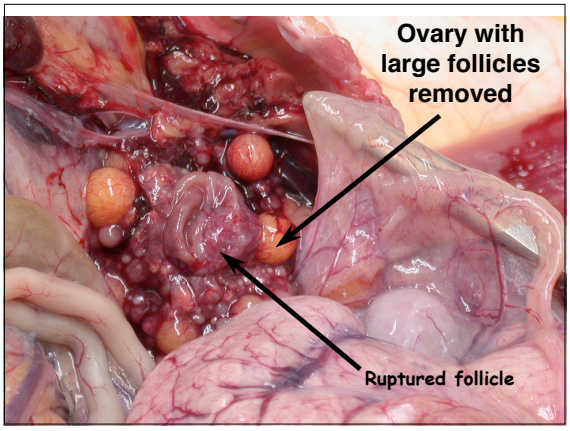
Left side of Reproductive Tract Develops!!

Chicken Tract

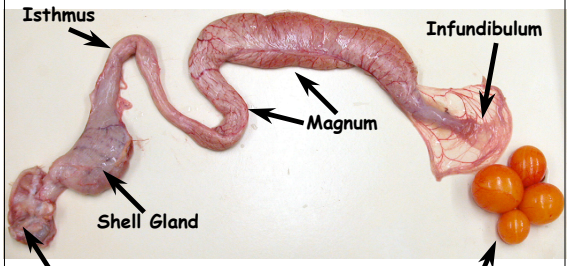


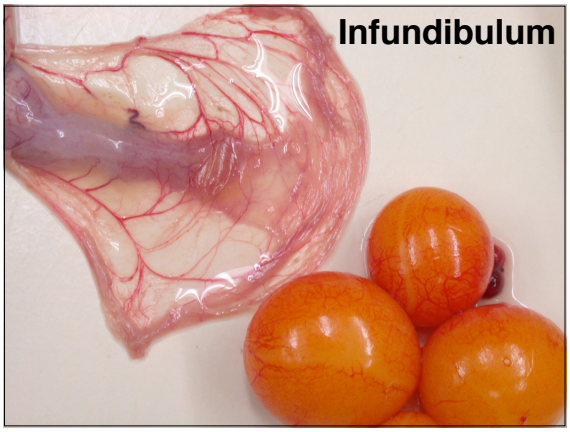
Chicken Ovary



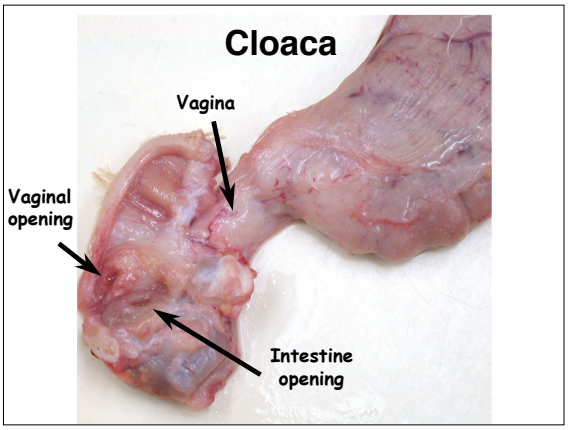


Chicken Reproductive Tract

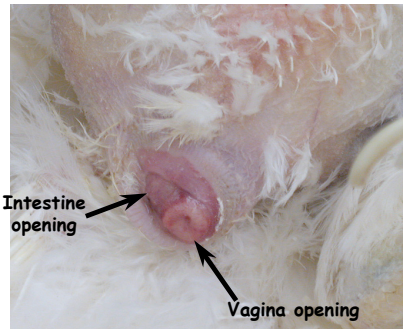




Cloaca



Cloaca of Chicken



Historical Development of Reproductive Physiology

Aristotle 384-322 BC

Generation of Animals

- Fetus arises from menstrual blood
- Seminal plasma initiates the conversion of menstrual blood
- Semen from all parts of body

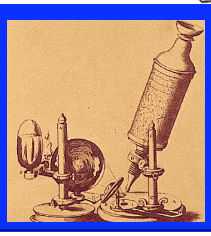
The Age of Gross Anatomy

- Fallopius (1562)
  - Describes the oviduct
- Coiter (1573)
  - Describes the corpus luteum
- Regnier de Graff (1672)
  - Describes the antral follicle (Graafian Follicle)

Development of the Microscope



- van Leewenhoek (1677)
  - Describes spermatozoa in semen







What is the role of spermatozoa?

- Spallanzani (1780)
  - Sperm were the fertilizing agent in semen
  - Successful artificial insemination of a dog
- Dumas (1825)
  - Proves sperm the fertilizing agent

Modern Reprod. Physiology

- Gonads produce steroid hormones
- Regulation of estrous cycles in females
- Radioimmunoassay (RIA)
- Artificial Insemination
- Cryopreservation
- Prostaglandin used to control estrous cycles
- Biotechnology

Approach to Applications

- Develop basic knowledge of how system works
- Investigate methods that can perturb the system
- Manipulate the system to improve reproduction
  - Estrus Synchronization

Enhancing Reproduction

- Small improvements have profound effects on production
  - 3% improvement in birth rate results in an additional:
    - 1 million beef calves/year
    - 3.2 million pigs/year
    - 3.7 million gallons of milk/year

Current Trends

↑Production | Metabolic and Physiologic Changes | ↓Reproduction

- Continuing need to:
  - improve reproductive performance
  - understand how to apply new technology
- Ovsynch
- Clonning

Limiting Reproduction

Humans



Insects



Pets





Wildlife