

Unit B: Understanding Animal Reproduction

**Lesson 1: Anatomy and
Physiology of Animal
Reproductive Systems**

Terms

- Bladder
- Cervix
- Clitoris
- Copulation
- Cowper's gland
- Epididymis
- Fallopian tubes
- Follicles
- Gamete
- Gestation
- Infundibulum
- Labia majora
- Labia minora
- Mucosal cells
- Ova
- Ovary
- Oviducts

Terms Continued

- Parturition
- Penis
- Prostate gland
- Retractor muscle
- Scrotum
- Semen
- Seminal vesicles
- Sheath
- Sigmoid flexure
- Sperm
- Spermatozoa
- Testicles
- Testosterone
- Urethra
- Urine
- Uterine horns
- Uterus
- Vagina
- Vas deferens
- Vulva
- Zygote

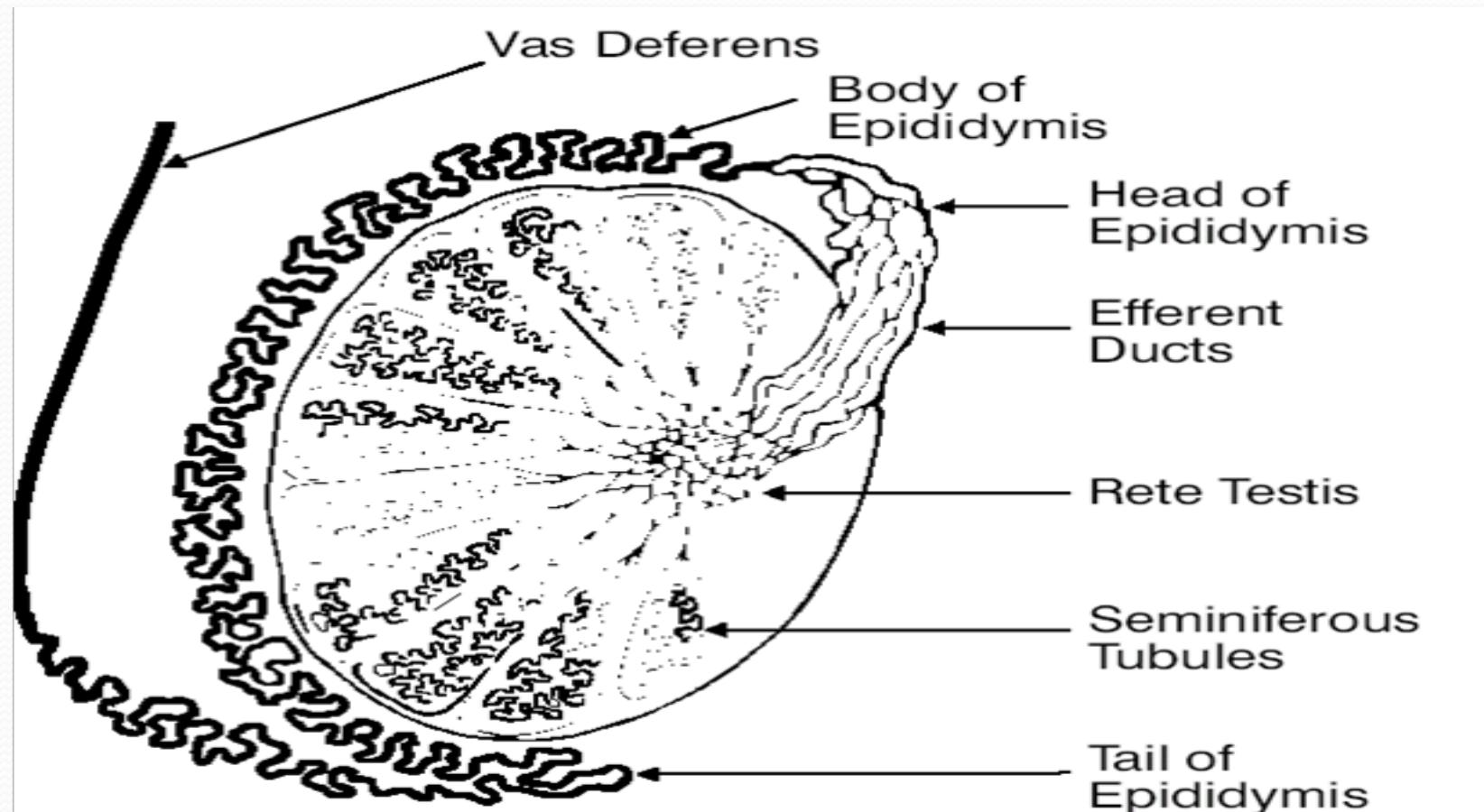
What are the major reproductive organs in male mammals?

What are the functions of those organs?

- I. To have a successful livestock operation, a producer must have an understanding of the functions of the various reproductive organs.
- The male reproductive system contains several interconnected parts that must all work together in order to have successful mating. Some of the major organs found in the male reproductive system are:

A. Testicles—The ***testicles*** produce ***sperm***, the male sex cells also called ***spermatozoa***. They also produce a hormone called ***testosterone*** that causes the appearance and behavior of the animal to be masculine. There are two testicles present in male cattle.

Testes—Primary Reproductive Organ of the Bull



B. Epididymis—The ***epididymis*** is the storage site for sperm cells. These cells enter the epididymis from the testicle to mature. Sperm become able to fertilize a female's ***ova*** or female sex cell, as it travels through the epididymis. There is a separate epididymis attached to each testicle.

C. Scrotum-the ***scrotum*** is a two-lobed sac that contains and protects the two testicles. It also regulates the temperature of the testicles, maintaining them at a temperature lower than body temperature.

- When the environment temperature is low, the scrotum contracts. When the environmental temperature is high, the scrotum relaxes
- Maintaining the correct temperature is critical in that being too hot or too cold can affect the production and vitality of sperm.

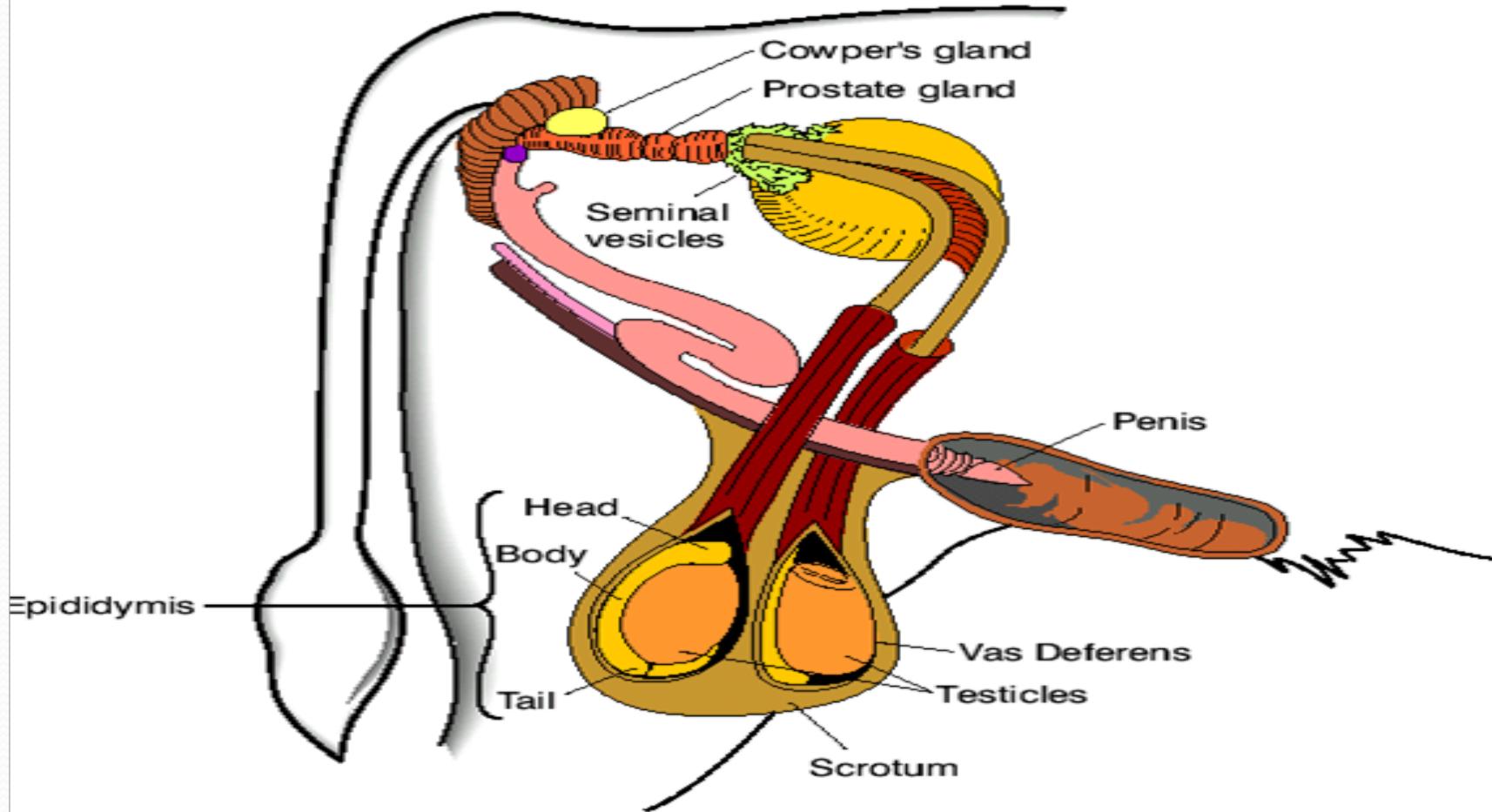
- D. Vas Deferens—The ***vas deferens*** is essentially a transportation tube that carries the sperm-containing fluid from each epididymis to the urethra.
- E. Urethra—The ***urethra*** is a large, muscular canal extending from the urinary bladder. Both semen and urine move through the urethra to the end of the penis.
- F. Accessory Sex Glands—There are several glands that add volume and nutrition to the sperm-rich fluid coming from the epididymis.

- G. Seminal vesicles—The ***seminal vesicles*** open into the urethra. They produce a fluid that protects and transports the sperm.
- H. Prostate gland—The ***prostate gland*** is near the urethra and the bladder. It produces a fluid that is mixed with the seminal fluid.
- I. Cowper's gland—The ***cowper's gland*** produces a fluid that moves down the urethra ahead of the seminal fluid. This fluid cleans, neutralizes, and helps protect the sperm through the urethra. The mixture of the seminal and prostate fluid and the sperm is called ***semen***.

J. Penis—The ***penis*** deposits the semen within the female reproductive system. The urethra in the penis is surrounded by spongy tissue that fills with blood when the male is sexually aroused. This causes an erection that is necessary for ***copulation***, or mating to occur.

- The ***sigmoid flexure*** and the ***retractor muscle*** extend the penis from the ***sheath***, a tubular fold of skin. The blood that fills the spongy tissue when sexual arousal occurs causes erection.

Reproductive Organs of the Bull

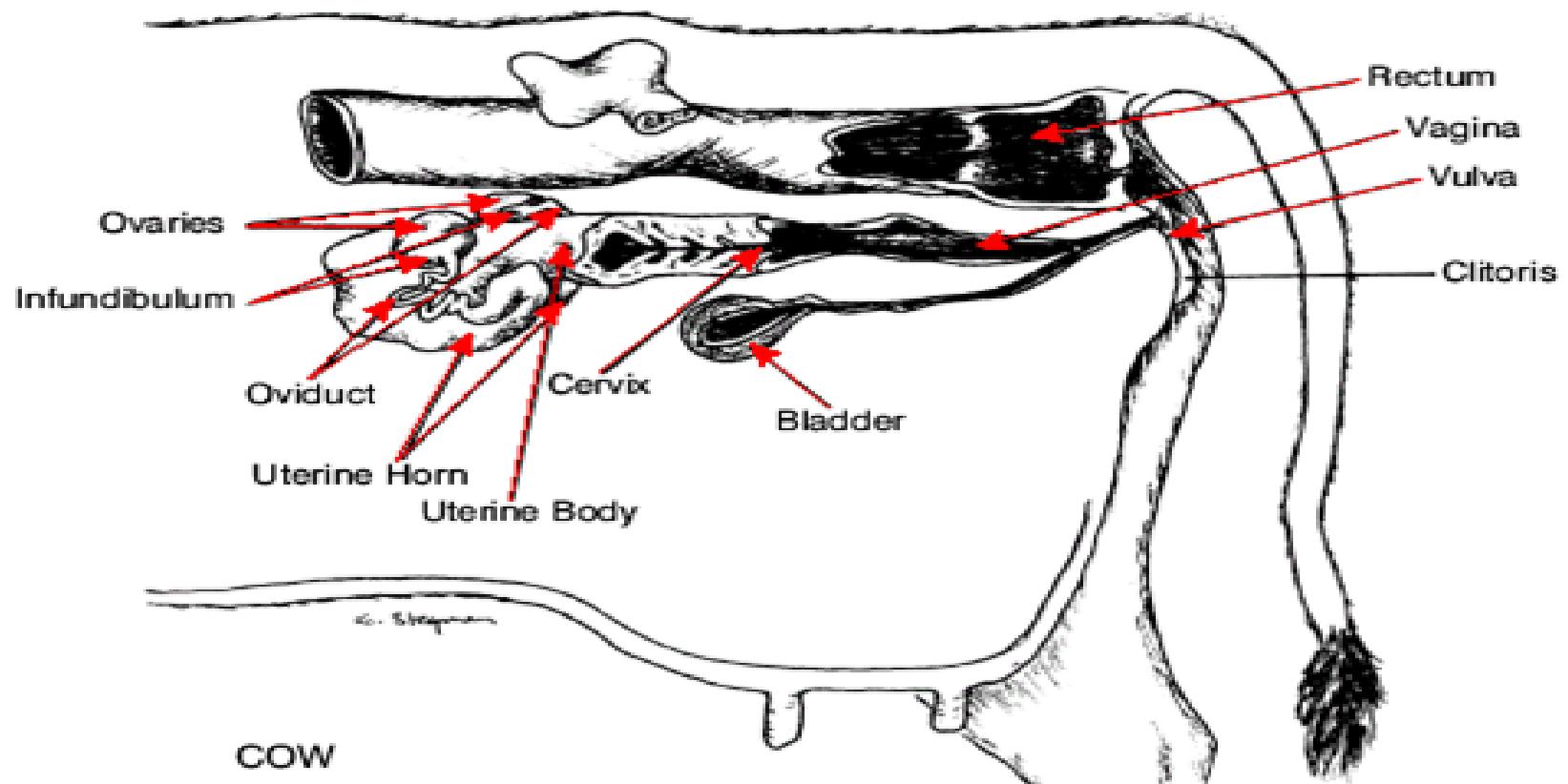


What are the major reproductive organs and functions in female mammals?

II. Like males, female cattle have a complex system of organs that make up the reproductive system.

- Some of the major organs that make up the female reproductive tract are:

Female Reproductive Organs of a Cow



A. Ovary—The **ovary** produces female gametes.

- A **gamete** is a sex cell that can unite with other sex cells. These are called **ova** or eggs. A female mammal will typically have two ovaries. The ovaries also produce the female sex hormones estrogen & progesterone.
- Within each ovary there are hundreds of tiny **follicles** or cavities. The ova are produced in the follicles, the largest single cell in the body.

B. Oviducts—The ***oviducts or fallopian tubes*** are two tubes that carry the ova from the ovaries to the uterus. The oviducts are close, but not attached to the ovaries.

- The funnel-shaped end of each oviduct that is close to the ovary is called the ***infundibulum***. At ovulation the follicle ruptures, releasing an ovum that is caught by the infundibulum.
- After copulation, sperm move through the uterus to the oviduct. Fertilization of the ovum occurs in the upper end of the oviduct. The ***zygote***, or fertilized egg cell, moves to the uterus about 2 to 4 days after fertilization.

C. **Uterus**—The ***uterus*** of mammals is a Y-shaped structure consisting of the body, two uterine horns, and the cervix. The size and shape of the uterus varies among the various species. The upper part of the uterus consists of the two ***uterine horns*** that develop into the oviducts or Fallopian tubes. In most species pregnancy normally occurs in the uterine horns. In all species, the fetus grows within the uterus, where it remains until ***parturition*** or birth.

- The **cervix** is the lower outlet of the uterus. It is composed primarily of connective tissue that constitutes the gateway between the uterus and the vagina.
- Like the rest of the reproductive tract, the cervix is lined with **mucosal cells**. These cells make significant changes as the animal goes from one estrous cycle to another and during **gestation** or pregnancy.

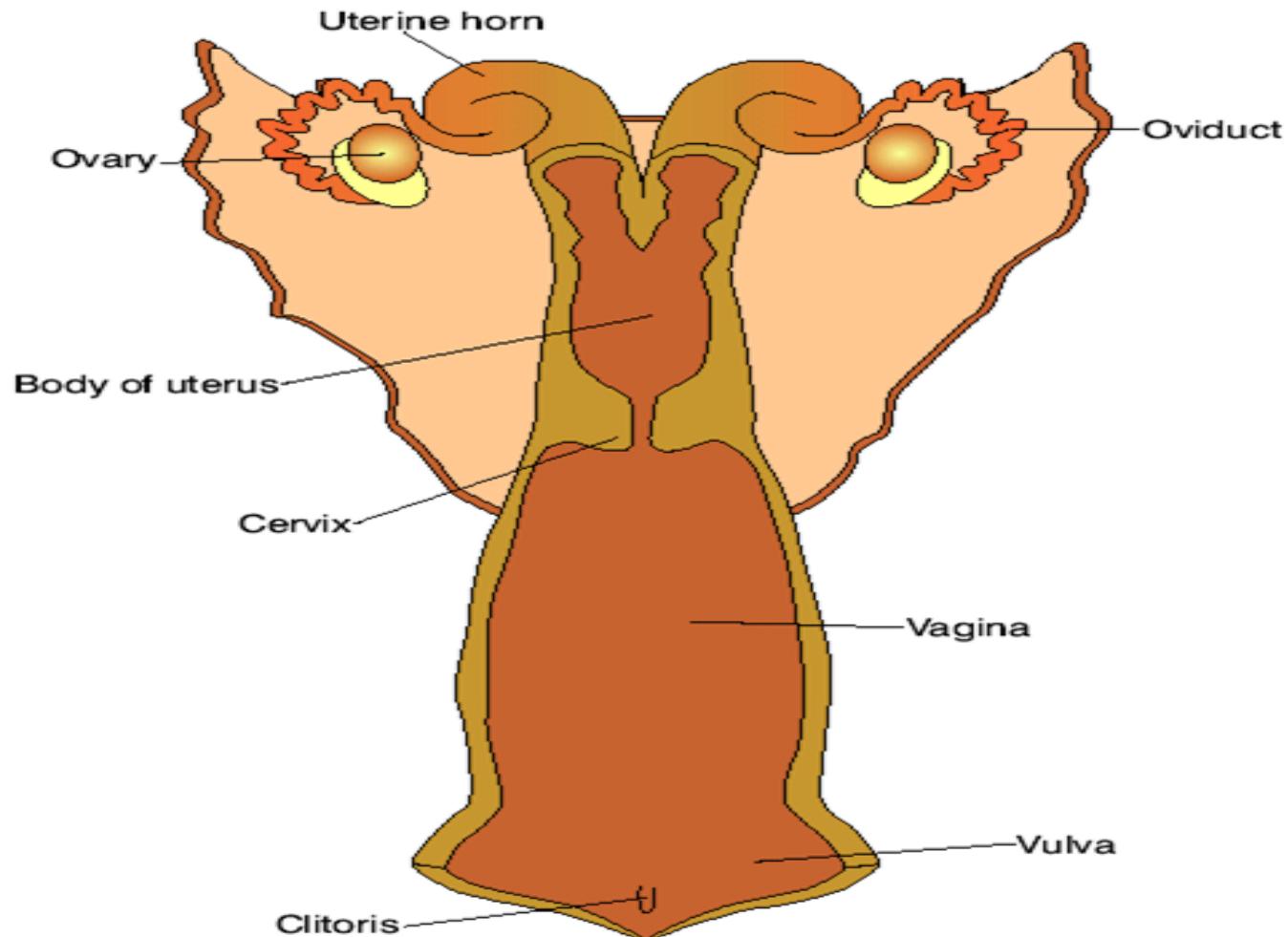
D. Vagina—The **vagina** serves as the female organ of copulation at mating and as the birth canal at parturition. It is the passage between the cervix and the vulva. The lining is moist during estrus and dry when the animal is not in estrus

E. Bladder—The **bladder** collects the liquid waste, which is called **urine**. The urine passes through the urethra to the vagina.

F. Vulva—The **vulva** is the external opening of the reproductive and urinary systems. The exterior, and visible part of the vulva, consists of two folds called the ***labia majora***. The ***labia minora*** are two folds located just inside the ***labia majora***.

G. Clitoris—The ***clitoris*** is the sensory and erectile organ of the female. It is located just inside the vulva.

Dorsal View of the Reproductive Tract of a Female Cow



Review/Summary

- What are major reproductive organs in male cattle?
- What are major reproductive organs in female cattle?