

STRONG TOWER ACADEMY

SS 1 AGRIC. SCIENCE

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REPRODUCTIVE SYSTEM IN ANIMALS

In animals, the trait of the greatest economic importance is the reproductive efficiency. Some farm animals naturally produce one offspring per parturition. They are described as **Monotocous** (e.g. cattle). Multiple birth is possible in others and they are described as **Polytocous** (e.g. pig, goat). Both the single and multiple births are referred to as VIVIPAROUS reproduction. Birds lay eggs and the young ones develop outside the body of the mother. They are therefore, said to be OVIPAROUS. However, in all farm animals fertilization is internal.

MAMMALIAN MALE REPRODUCTIVE SYSTEM

The male reproductive organs of farm animals include:

1. **The testes** (sing. testis): They are in pairs and are located outside the body inside the scrotum (or scrotal sac). They are the primary male organs of reproduction because produce/secrete sperm cells (spermatozoa) in the seminiferous tubules.
2. **Epididymis**: This is a coiled tubule which temporarily stores mature sperm cells and allows them to mature further and acquire more capacity to fertilize. It is 3-3.5m in length.
3. **Vas deferens**: This is responsible for the conducting/carrying the sperm from the epididymis to the urethra. The removal of the vas deferens is known as **Vasectomy**.
4. **Urethra**: This is a urogenital tract which transports urine from the bladder to the outside. It also transports semen to the reproductive tract of the female.

PLEASE DRAW THE MAMMALIAN MALE REPRODUCTIVE SYSTEM FROM YOUR TEXTBOOK

5. **Accessory glands**: These include:
 - a. **Seminal vesicle**: This is the region where certain fluids rich in food substances are secreted. The seminal fluids help in feeding the spermatozoa before fertilization takes place.
 - b. **Prostate glands**: These secrete a prostate fluid which helps to inhibit urine formation during copulation and ejaculation.
 - c. **Cowper's gland**: This secretes the cowper's fluid which is alkaline in nature and helps to reduce/neutralize the acidity of the spermatozoa.
6. **Penis**: It is endowed with spongy erectile muscles and blood veins. When the animal is aroused, it is filled with blood, thus, it becomes rigid (erect) and is able to penetrate the vagina. It conducts and discharges the sperm cells into the vagina.

N.B. COPULATION means mating between male and female animals.

EJACULATION means the release of spermatozoa by the male animal during copulation. It occurs at the climax of copulation.

MAMMALIAN FEMALE REPRODUCTIVE SYSTEM

A typical female mammal has the reproductive organs made up of the following: a pair of ovaries, oviduct, uterus, cervix, vagina, vulva and clitoris.

1. **Ovaries:** They are called primary organs and are suspended by ligaments on the dorsal wall behind the kidney. They produce eggs/ova (sing. ovum) and the hormone **oestrogen**. Ovaries contain follicles which when mature shed the eggs in a process called OVULATION.
2. **Infundibulum:** This is also known as the fallopian funnel. It receives the egg after ovulation. It leads to the fallopian tube or oviduct.
3. **Oviduct:** a.k.a fallopian tube receives the egg and the sperm cell when the animal is inseminated. Fertilization/conception takes place here before the embryo now moves down to the uterus/womb.
4. **Uterus (womb):** The fallopian tubes merge to form the uterus. Sperm cells pass through it to the fallopian tubes. It also receives the embryo for implantation and then nourishes it until parturition.
5. **Cervix:** This is a narrower canal on the posterior end of the uterus. It blocks the uterus during pregnancy to protect the embryo. It also prevents foreign bodies from entering the womb. During heat and parturition, it relaxes and is moist.
6. **Vagina:** It is a large, expansible canal which receives the penis. Spermatozoa (sperm cells) are also deposited into it. It serves as the birth canal as well as the urinary tract.
7. **Clitoris:** This is a highly sensitive organ. It is very sensitive, erotic and brings the female animal into the mating mood. It is equivalent of the male penis.
8. **Vulva:** This is also known as the LABIA MAJORA. It is the opening of the female genital tract into the exterior/outside.

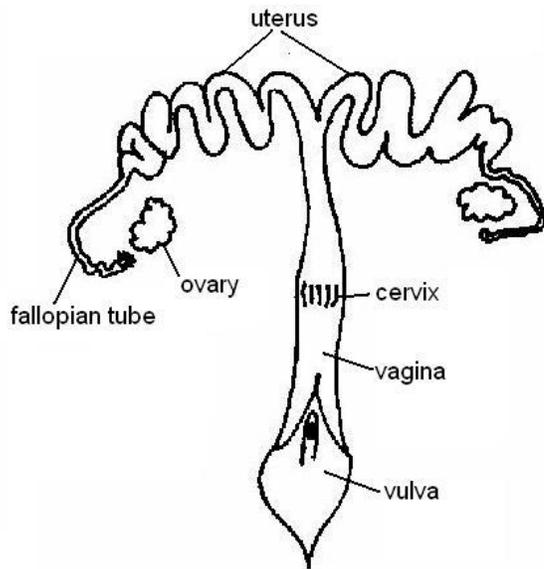


Figure 1. Reproductive system of a cow (female cattle)

PLEASE, DRAW THE MAMMALIAN FEMALE REPRODUCTIVE SYSTEM FROM YOUR TEXTBOOK

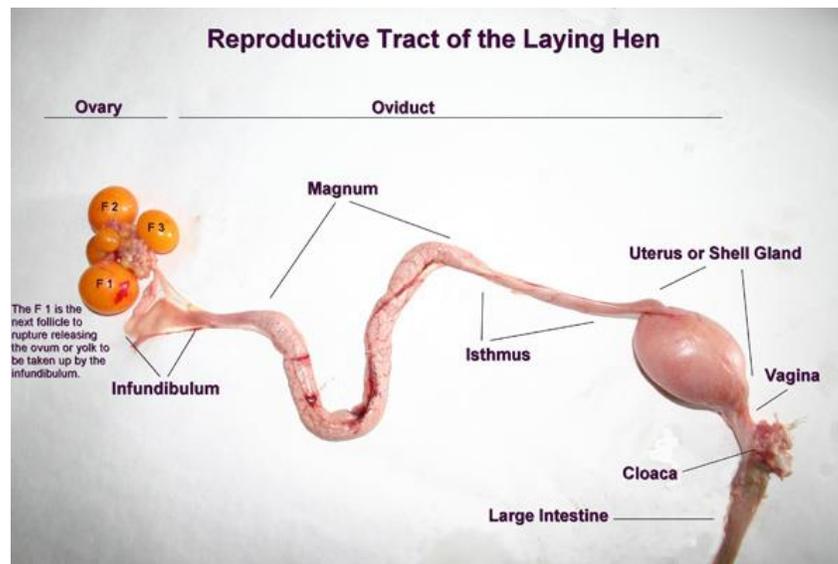
REPRODUCTIVE SYSTEM OF A MALE BIRD

The male reproductive system in poultry birds is similar to that which operates in the mammals but with slight modifications. The system comprises:

1. **Testes** (sing. testis): They help to secrete spermatozoa. The removal of the testes of an animal is called CASTRATION.
2. **Epididymis**: They help to store spermatozoa after secretion.
3. **Vas deferens**: It transports the spermatozoa to the papillae.
4. **Papillae** (sing. papilla): This is used in introducing the sperm cells into the vagina of the female.
5. **Cloaca**: This is the pathway of sperm cells and faeces expulsion.

REPRODUCTIVE SYSTEM OF A FEMALE BIRD

The reproductive system of a female bird consists of the following: ovary, infundibulum, oviduct, magnum, isthmus, shell gland or uterus, vagina and the cloaca.



DO NOT DRAW THIS

PROCESSES OF EGG FORMATION IN POULTRY

Egg formation processes in poultry start from the ovary. Unlike mammals, hens have only one functional ovary in the left side of the genital tract. The second ovary in the right side stops growing after 7-9 days of incubation, leaving a non-functional remnant.

The stages of egg formation occur in various parts of the reproductive tract and are summarized as follows:

1. **Ovary:** The yolk is formed in the ovary and is released during ovulation.



Figure 2. Egg yolk when formed before addition of other parts **(DON'T DRAW)**

2. **Infundibulum:** It receives the yolk from the ovary. The yolk stays here for 15-18 mins. before it moves down to the oviduct or fallopian tube.
3. **Oviduct:** Fertilisation is expected to take place here. But whether there is fertilisation or not, the egg still proceeds down to the magnum.
4. **Magnum:** Here, the albumen is formed on the yolk and the chalaza is also secreted round the yolk. The yolk spends about 3hours in this segment.

5. **Isthmus:** This is the place where egg membranes (i.e. the inner and the outer membranes) are added. At some section of the membrane near the large end, the two membranes separate to produce the air space. The egg spends about 1hr. 15mins. (75mins.) in this segment. The shape is formed here.
6. **Uterus or shell gland:** The egg shell is formed here. The shell is made mainly of calcium and phosphorus derived from the diet. Water and salt are added to the albumen, the twisting of the chalaza is also done here in the uterus. The egg stays 19-20hrs. in the uterus and is therefore sent to the vagina.
7. **Vagina:** The vagina has no egg-forming function i.e. nothing is added to the egg in the vagina. The egg remains here for about 10-15mins. before it moves to the cloaca.
8. **Cloaca:** The egg is laid through the cloaca, usually with the large end first. The egg shell hardens when air reacts with it.

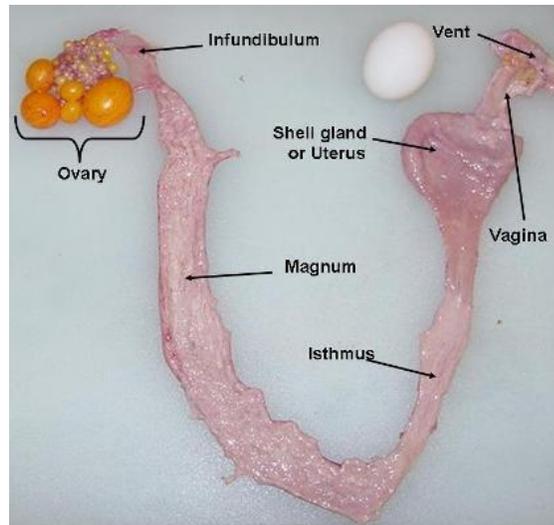


Figure 3 Reproductive system of a hen

NOTE: PLEASE DRAW THE FEMALE REPRODUCTIVE SYSTEM FROM YOUR TEXTBOOK

DIFFERENCES BETWEEN THE REPRODUCTIVE SYSTEM OF MAMMALS AND BIRDS

MAMMALS	BIRDS
1. Eggs or ova are small in size	Large eggs are laid after fertilization
2. System is viviparous	System is oviparous
3. Embryo develops inside the female animal's body	Embryo develops outside the female animal's body
4. They suckle the young one with milk from the	They do not produce milk and do not suckle their

mammary gland	young one.
5. spermatozoa is stored outside the main body at a lower temperature	Spermatozoa are stored inside the main body for a long time.
6. Pronounced penis and scrotum in the male	Penis is reduced to a small papilla and does not have scrotum.

ASSIGNMENT: Draw the internal structure of an egg