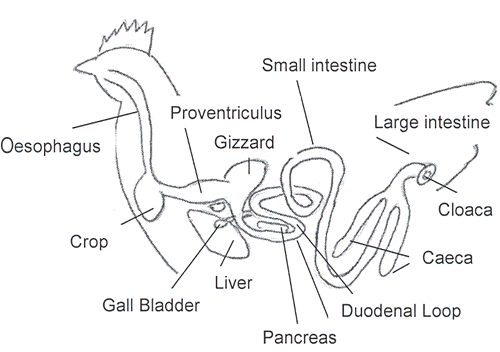
**Lymphatic System:**

The lymphatic system of chickens does not contain lymph nodes and in general is poorly developed when compared with mammals. There are several organs which contain lymphatic tissue- the bursa of Fabricius, the **spleen**, and the **thymus**.

The **bursa of Fabricius** is located as a diverticulum in the dorsal wall of the cloaca. This bursa contains lymphatic tissue and has a function related to immunity and antibody production.

**Chickens - digestive system**

The fowl's digestive system breaks down ingested food to basic components by mechanical and chemical means. These basic components are then absorbed and used throughout the body.



Chemical action includes the release of digestive enzymes and fluids from the stomach, pancreas and liver.

Beak / Mouth: Chickens, as with most birds, obtain feed with the use of their beak. Food picked up by the beak enters the mouth. Chickens do

not have teeth so they are not able to chew their food. The mouth does contain glands which secrete saliva which wets the feed to make it easier to swallow. The saliva also contains some enzymes which start the digestion of the food eaten. The chicken’s tongue is then used to push the feed to the back of the mouth so that it can be swallowed

**Esophagus**: The esophagus is a flexible tube that connects the mouth with the rest of the digestive tract. It carries food from the mouth to the crop and from the crop to the proventriculus.

**Crop:** The crop is an out-pocketing of the esophagus and is located just outside the body cavity in the neck region. Any swallowed feed and water is stored in the crop until it is time to move on to the rest of the digestive tract. When the crop is empty, or nearly empty, it sends hunger signals to the brain so that the chicken will eat more.

**Proventriculus:** The esophagus continues past the crop to connect the crop to the proventriculus. The proventriculus (also known as the ‘true stomach’) is the glandular stomach where digestion begins.

Gizzard / Ventriculus: The gizzard, or ventriculus, is a part of the digestive tract unique to birds. It is often referred to as the ‘mechanical stomach’. It is made up of two sets of strong muscles which act as the bird’s teeth . Consumed feed and the digestive juices from the salivary glands and the proventriculus pass into the gizzard for grinding, mixing, and mashing.

**Small intestine**: The small intestine is made up of the duodenum (also referred to as the duodenal loop) and the lower small intestine.

The lower small intestine is composed of two parts, the **jejunum** and **ileum**. The Merkel’s Diverticulum marks the end of the jejunum and the start of the ileum.

**Ceca** (plural form; singular = **cecum**): The ceca are two blind pouches located where the small and large intestines join.

**Large intestine** (also known as the **colon**): Despite the name, the large intestine is actually shorter than the small intestine.

**Cloaca**: In the cloaca there is a mixing of the digestive wastes together with wastes from the urinary system (urates). Fecal material is usually voided as digestive waste with white uric acid crystals on the outer surface (i.e., chickens do not urinate/pee).

The reproductive tract also exits through this area (e.g., eggs or sperm).

Its opening at the posterior end of the bird is known as the vent.

**Pancreas:** A yellow organ lying in the duodenal loop.

**Liver:** The largest organ in the body, divided into two lobes, produces bile and is a major detoxification organ.

**Drinking behaviour:** Most birds are unable to swallow by the "sucking" or "pumping" action**,** and drink by repeatedly raising their heads after filling their mouths to allow the liquid to flow by gravity, a method usually described as "sipping" or "tipping up".

**Nervous system**

The nervous system consists of the nerve cells which concentrated in the brain, and spinal cord. Usually the nervous system is divided into two parts, the somatic which is responsible for the voluntary actions of the body, and the autonomic system which is responsible for the coordination of involuntary actions.

**Endocrine system**

The **endocrine system** consists of a number of organs (glands) located in different areas of the body and which play an important part in the proper functioning of the animal. The organs produce special compounds called hormones.

### Pituitary gland or hypophysis, Hypothalamus, Pineal body, Thyroid gland, Parathyroid gland, Adrenal gland, Isilet of langerhans(in pancreas), Testes, Ovary, Ultimo bronchial body.

Male reproductive system

The male fowl has two testes which are situated high up in the abdominal cavity, along the back. These never descend into an external scrotum, as the case with other animals.

They produce semen;the sperm remain viable at body temperature.

**TESTIS**

**PAPILLA**

**Copulation**

**Female reproductive system**

The reproductive system in the female chicken is in two parts: the ovary and the oviduct. Unlike most female animals, which have two functioning ovaries, the chicken usually has only one. The right ovary stops developing when the female chick hatches, but the left one continues to mature.

**OVARY**

The ovary consists of a mass of yellowish, rounded objects called follicles, each containing an ovum or yolk.

**OVIDUCT**

The oviduct is a tube like organ lying along the backbone between the ovary and the tail. In a mature hen, it is approximately 63-69 cm (25-27 inches) long.

The oviduct consists of five distinct parts or sections, each having different functions:

1. **Infundibulum (or funnel)** - located adjacent to the ovary, the infundibulum collects the yolk after its release from the follicle as a funnel and directs it into the oviduct. Fertilization of the ovum by the male sperm occurs here, and is 6-9 centimeters long.

**2- Ampulla or magnum** - at approximately 40 centimeters long during which time the thick white or **albumen** is added.Time (3 hours).

**3- Isthmus** - at about 10-12 centimeters in length. The isthmus is where the inner and outer shell membranes are added.

**4- Uterus or shell gland** - at approximately 10-12.5 centimeters in length it secretes about 20% of the albumen and the egg’s shell. Time (19 – 20hours).

**5. Vagina** - at approximately 10-12 centimeters in length. The vagina is made of muscle which helps push the egg out of the hen’s body.

The formation of the hen's egg

The normal egg consists of the following major parts:

Yolk carrying the ovum - produced by the ovary

Albumen or white – produced mainly in the magnum

Shell membranes – produced in the isthmus

Shell – produced in the uterus or shell gland

Each yolk or ova takes about 10 days to grow and reach maturity when it is approximately 31% of the weight of the egg.

