AVIAN REPRODUCTION

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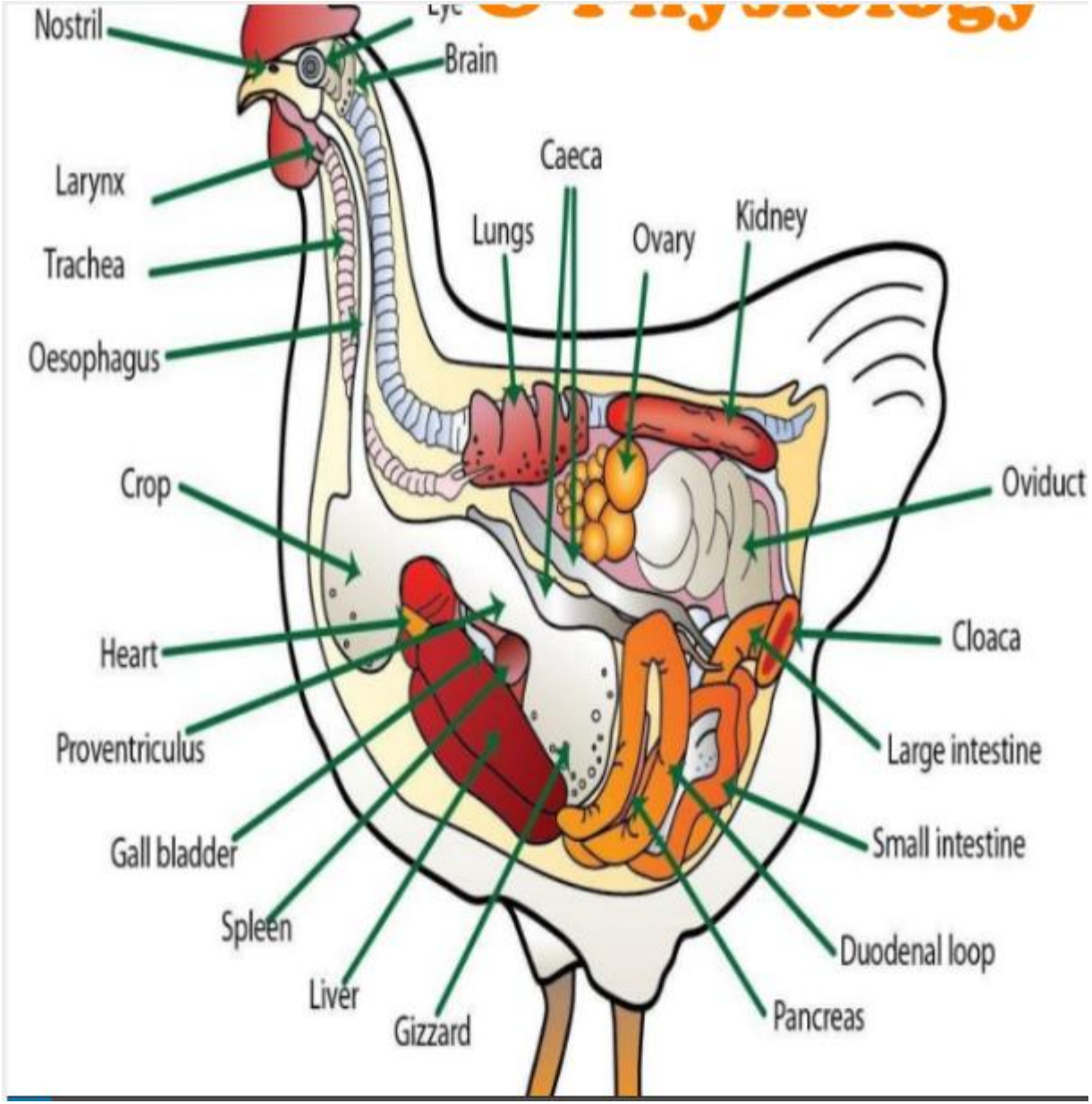

Nostril
Brain
Larynx
Caeca
Lungs
Ovary
Kidney
Trachea
Oesophagus
Crop
Oviduct
Heart
Cloaca
Proventriculus
Large intestine
Gall bladder
Small intestine
Spleen
Duodenal loop
Liver
Pancreas
Gizzard

- The avian reproductive system is very different from that of mammals and is better suited to the peculiar hazards of being a bird.
- The biggest problem with being a bird is that everyone is trying to eat you. While most mammals (especially primates) have adopted a strategy of having relatively few offspring and devoting a fair amount of parental energy and time to caring for those few, most birds (with some notable exceptions) have gone the other way

- : they produce lots of offspring, give them some minimal amount of raising – in some cases, none – then toss them to the winds, literally and figuratively.

HORMONALCONTROL OF REPRODUCTION

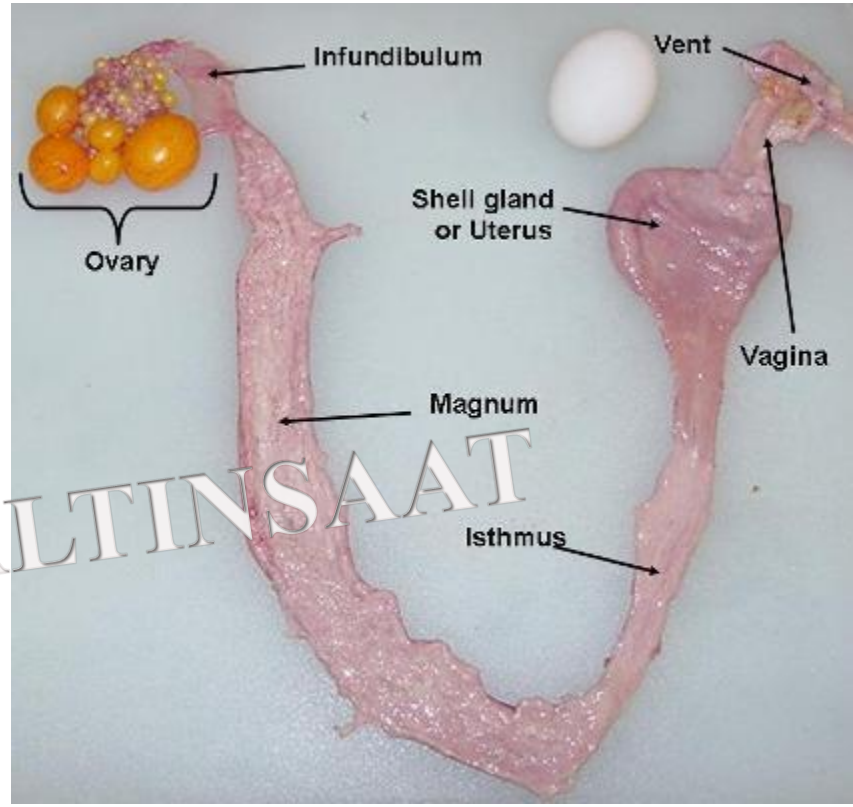
- ***Hypothalamus,***
- ***Pitutary gland***
- ***Gonads***
  - Ovarium
  - Testicles

- The release of the follicle from the ovary is controlled by hormones produced within the pituitary and the follicles themselves, and both are under control of the lighting schedule.
- As the largest, or so-called F1 follicle, in the ovary “matures”, its production of hormones changes resulting in greater output of progesterone.
- This change itself is controlled by output of luteinising hormone (LH) and follicle stimulating hormone (FSH) from the brain, which is controlled by the light/ dark cycle.
- The release of luteinising hormone from the brain only occurs during a 6-8h period each day, and this is influenced by the pattern of light:dark each day.
- It is the failure to release luteinizing hormone results in a non-egg laying day, or a pause in the clutch sequence.

STRUCTURE OF THE OVARY AND OVIDUCT

- The female reproductive system of the chicken is divided into two main parts: the ovary and the oviduct.
- In the majority of avian species, including chickens, only the left ovary and oviduct are functional.
- Although the right is present embryologically, it regresses during development and is vestigial in the adult bird.

- As in mammals the oviduct is lined by an epithelia surrounded by smooth muscle.
- However the function of various portions of the tract are quite different from mammals.



Ovary

- The ovary is a cluster of developing ova, and is located midway between the neck and the tail of the bird and attached at the back.
- The ovary is fully formed when a pullet chick hatches but is very small until the chick reaches sexual maturity.
- The mature hen has only one ovary and oviduct even though left and right reproductive systems are evident during very early incubation.
- Unlike the situation with testes in the male, the right ovary and oviduct regress during mid-incubation, and are nonfunctional in all “normal” hens.

- The color of yolks can be improved (made darker) by the addition of marigold petals to feed to provide the desired level of xanthophylls. The ovum is enclosed in a sac that ruptures along the **stigma**, or suture line, during ovulation.

Oviduct

- When ovulation occurs, the ovum (yolk) enters the **oviduct**. The oviduct is a twisted tube that is 25 to 27 inches long when fully developed and is divided into five major sections. These sections are the infundibulum, magnum, isthmus, shell gland, and vagina.

Infundibulum

- The first part of the oviduct, the **infundibulum** (or funnel) is 3 to 4 inches long and engulfs the ovum released from the ovary.

Magnum

- The next section of the oviduct is the **magnum**.
- At 13 inches long, it is the largest section of the oviduct.

Isthmus

- The third section of the oviduct is the **isthmus**, which is 4 inches long.
- The isthmus is where the shell membranes form.

Shell gland (uterus)

- The next section of the oviduct is the **shell gland** (or uterus), which is 4 to 5 inches long.
- In this section, the shell forms on the egg.
- The shell largely is made of calcium carbonate.

Vagina

- The last part of the oviduct is the **vagina**, which is about 4 to 5 inches long.
- The vagina does not really play a part in egg formation but is important in the laying of the egg.