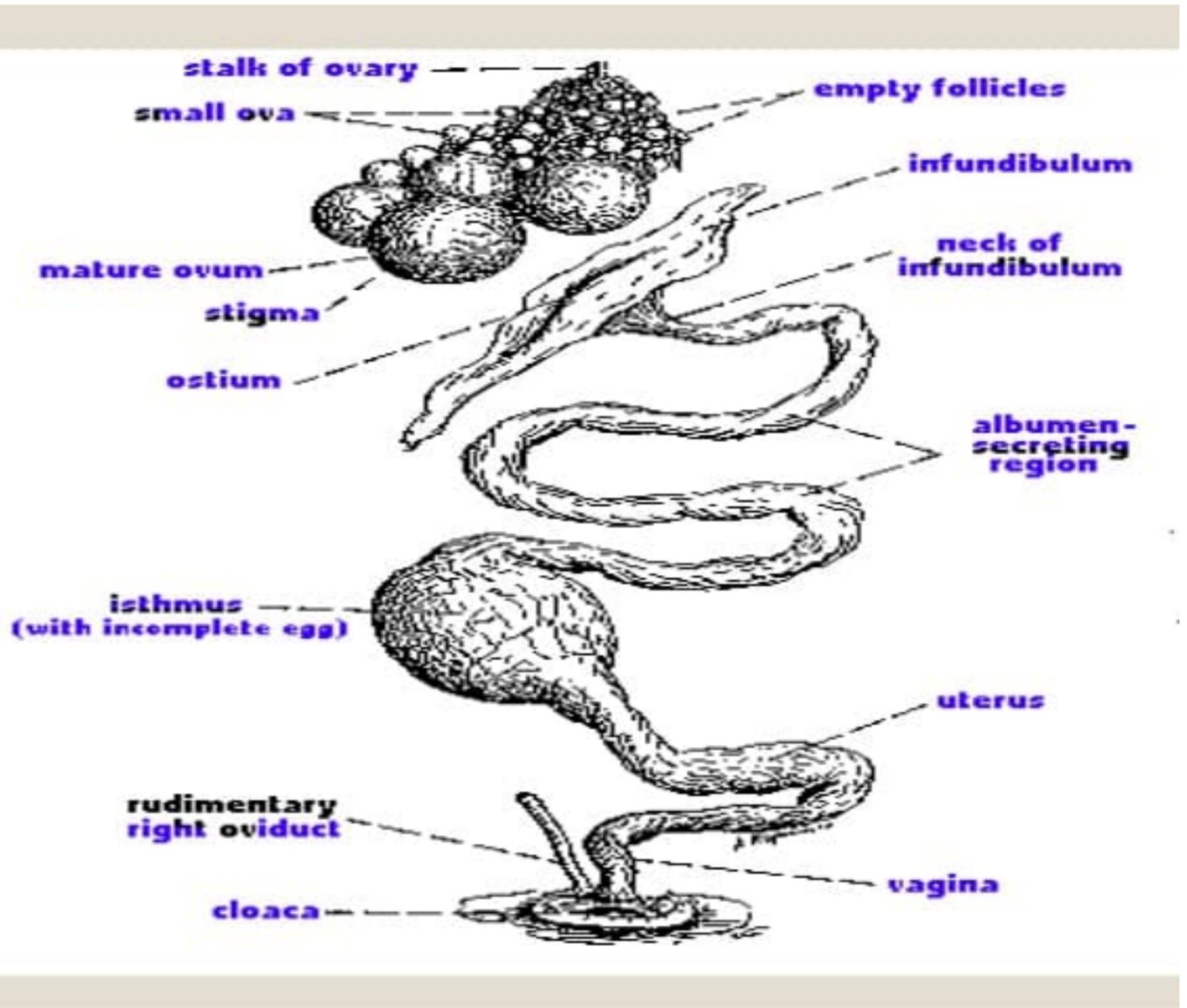


Formation and Structure of Egg

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Female Reproductive Track of Poultry

Ovary
+
Oviduct



Oviduct

Infundibulum



Magnum



Isthmus



Uterus



Vagina

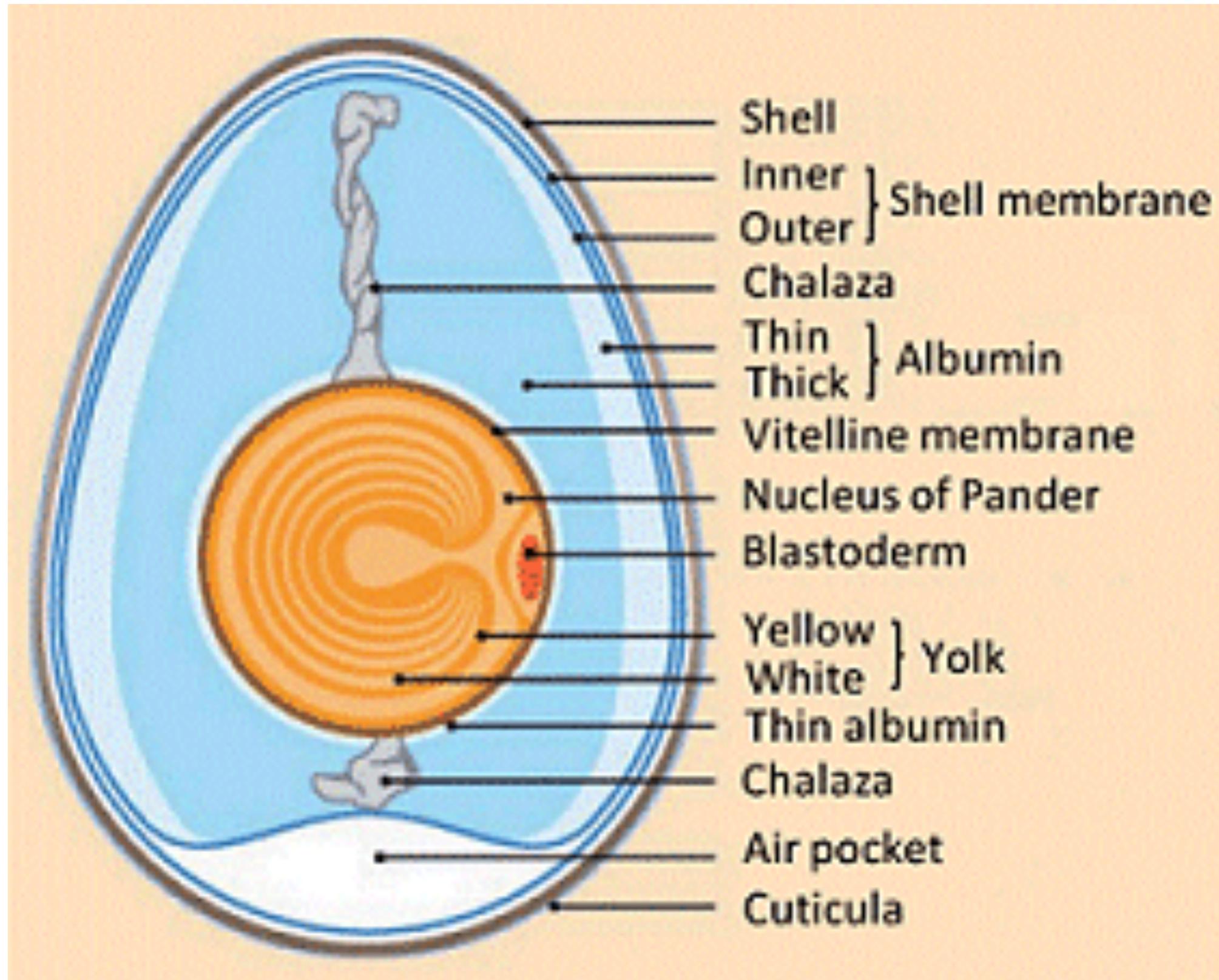
Note:

- The yolk is formed in the ovary, rest of the components are formed in the oviduct.
- The mature yolk is about 40mm in diameter.
- The oviduct is a large coiled tube like structure, 60-86 cms in length. It occupies a large part of the left side of the abdominal cavity.
- The oviduct is divided into 5 regions namely the infundibulum, magnum, isthmus, uterus and the vagina.
- Infundibulum is the funnel shaped structure which catches the matured ovary or yolk.
- The magnum secretes albumen.
- The isthmus secretes the shell membranes.
- The uterus, also known as the shell gland forms the egg shell
- The vagina, forms a pathway to the cloaca from where the egg is laid.

Note:

- Fertilisation takes place immediately after ovulation.
- When the egg is laid the small/narrow end of the egg comes out first.
- The time between the egg laying and next ovulation ranges between 14-75 minutes.
- The average interval between successive egg laying is 26.5 hrs. (Individual variation)
- The size of egg varies with the duration of holding egg and the species of bird.
- There is no air cell in the fresh egg at the moment it is laid. It starts cooling from 109 °F to 99 °F and finally it is stored at a temperature of 50-55 °F. As the egg starts cooling the contents within the egg start to contract. A slight vacuum is created and air is drawn in from the egg pores giving rise to an air cell between two shell membranes.

Cross Section of Egg....



Cross-section of an egg

Egg shell

- It is the outer covering of an egg which consist of pores.
- Constitutes 9-11% of the egg weight.
- The pores in the egg shell allow the exchange of air which allows the embryo to breath.
- There are approximately 7500 pores per egg. The size of the pores is big at the broader end.
- At the time of laying the outer surface of the shell is covered with cuticle which seals the pores. It protects the egg from outside temperature and prevents carbon dioxide to escape from the egg.
- Egg shell has two shell membranes, the outer egg shell membrane (a.k.a air cell membrane) and inner shell membrane. The air cell is formed between the two shell membranes and it is usually present at the broader end of the egg.

Cross-section of an egg

Albumen

- It is the white liquid portion of an egg and has 3 distinct layers outer thin albumin, middle thick albumen and inner thin albumen.
- Constitutes 58-60% of the egg weight.
- It consists of a chalaza which is attached to the chalaziferous layer, around the yolk.
- The chalaza plays an important role in keeping the yolk in a fixed place.

Cross-section of an egg

Yolk

- The yellow portion of the egg is known as yolk. It constitutes around 31% of the egg weight.
- The yolk consists of the germinal disc (a.k.a blastoderm/blastodisc), dark yolk layer, light yolk layer, the vitelline membrane (a.k.a yolk membrane) and the latebra (a.k.a white yolk).
- The germinal disc is known as the blastoderm in a fertile egg and as blastodisc in an infertile egg.
- The latebra or the white yolk is the structure which connects the germinal disc to the centre of the yolk.
- The germinal disc is located in a cone like portion of the latebra, known as the nucleus of pander. Fertilization of the egg takes place here.
- The yolk is made up of consecutive layers of dark and light yolk. The dark yolk contains carotenoid pigment whereas the light yolk layer doesn't.
- The vitelline membrane/ yolk membrane surrounds the yolk and maintains its structural integrity.



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