

Egg

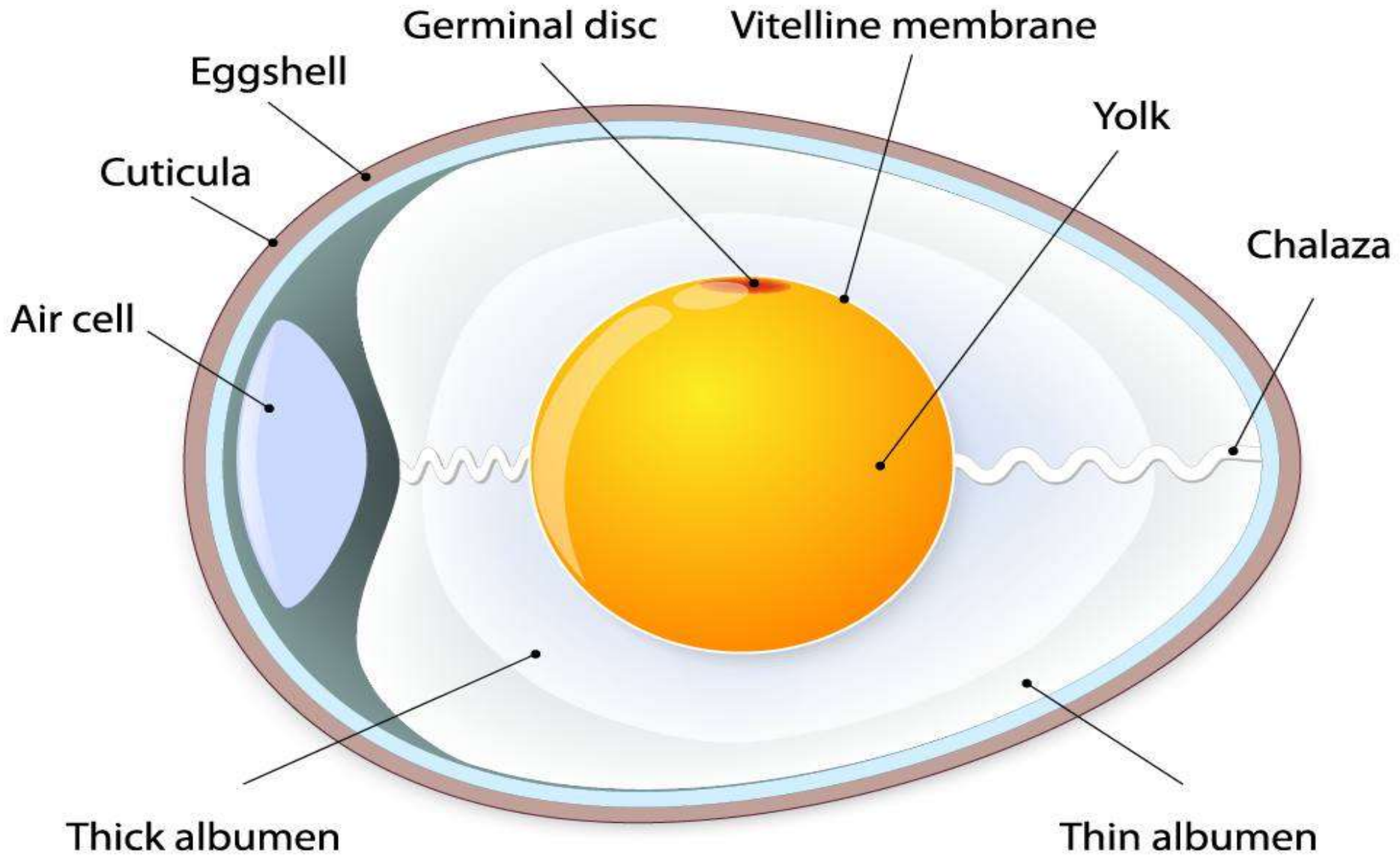
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CHICKEN EGG



Structure of egg

Shell :

- Outer hard covering made up of CaCO_3 .
- 11% of total part of egg.
- It has pores on it (6500-7500) which helps in gaseous exchange
- Shell is covered with a chalky powder known as cuticle which is bacteriostatic in nature.
- Shell thickness 0.3 – 0.5 mm

Shell membrane:

- Inner/outer membranes. The two layers at **blunt end** of egg from **air-space**.
- **0.01 to 0.02 mm** thick and act as **main line of defense** for microbial entries.

Air-cell/ Air space

- During incubation/hatching egg, it **supplies O₂** to developing embryo.
- The normal depth of air cell is **4 to 8 mm**.

Albumin: (58%)

- **White** part of egg
- The **outer loose albumin** layer (**21%**) of total egg albumin.
- **Inner loose albumin** **17.5%** of total albumin.
- **Chalaziferous** layer of inner thick albumen surrounds yolk and **3%** of total albumen.

Chalazae

- Two **cord-like, spiral shaped thick structures** emerge from outer periphery of outer thick white and merge into yolk present on both the sides of yolk.
- They hold of yolk in position and absorb any shocks and jerks to eggs by acting like spring protect vital yolk.

- **Yolk** : (31%)
- Yellowish ball like structure
- Yolk contain a **colorless vitelline membrane** which holds the fluid yolk mass together.
- Under the vitelline membrane **3 are 7-9 concentrate rings of light**
- Neck like structure called latebra which hold the germinal disk (**blastodisc/blatoderm**) in place

Egg size

- Proportion of egg size with respect to size follows negative correlation
- The birds weighing 2g-180g lay eggs weighing $1/9^{\text{th}}$ of their body weight whereas large size birds weighing 20 to 90 kg lay eggs which are only $1/55$ of their body weights.

Egg weight of poultry

Species	Egg weight (g)
Swan	1400
Goose	285
Pea fowl	90
Turkey	85
White pekin ducks	72
Muscovy duck	70
Chicken	58
Guinea fowl	50
Pigeon	18
Japanese quails	10

Egg shape

- **Great variations** in shape of avian egg
- Some eggs are **truly oval**, others may be spherical/Elongate/Equally pointed/rounded at both ends.
- The factors coordinating the **inner circular muscles** responsible for moving eggs forwards in oviduct and outer **longitudinal muscles**, which expand the oviduct are responsible for **shaping eggs** in oviduct.

Egg colour

- In Mediterranean class of chickens (Leghorn, Minorcas, Arconas) lay white eggs.
- American/English/Asiatic class lay tinted eggs with certain exceptions. Langshans of American class lay yellow/white egg, Brahmans of Asiatic class lay reddish yellow, China hens lay bright to dark yellow eggs.
- The Araucana of south America lays light bluish green eggs.

Abnormalities of eggs

- Double yolk
- Yolkless
- Egg within egg
- Egg having blood/meat spots
- Soft shelled egg thin shelled egg.

Thank you