

# Egg and Embryo Stages

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# What is an egg?

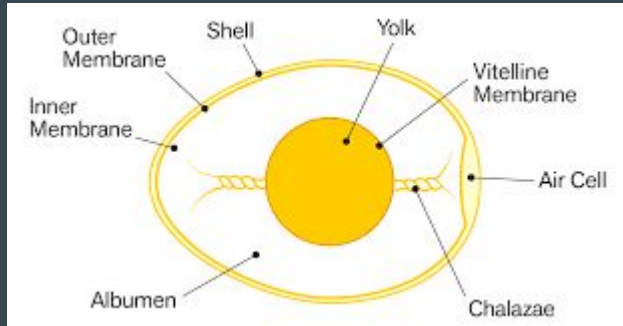
- It is the content of the hard-shelled reproductive body produced by a bird, considered as food.

# What are the stages of an egg?

- The Yolk
- The Egg White (Albumen)
- The Shell Membrane
- The Shell
- The Bloom

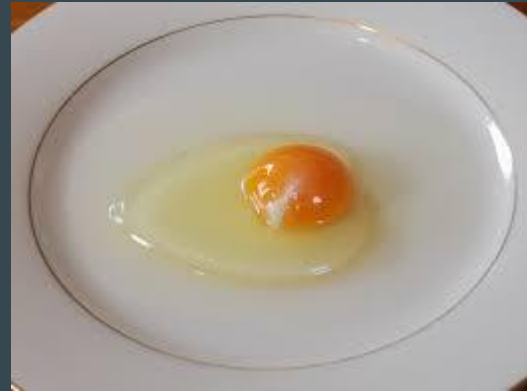
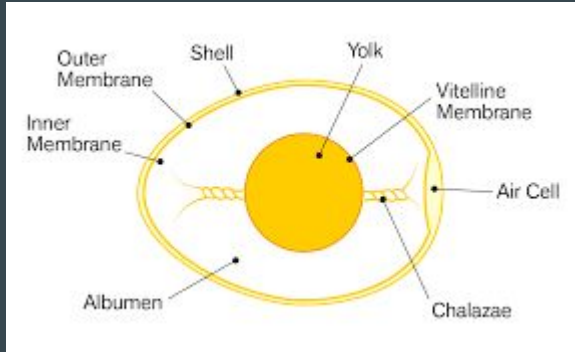
# The Yolk

- The process begins with the formation of the yolk within the hen's ovary. When the yolk reaches the appropriate size, the ovary releases it into the oviduct, where the rest of the egg develops.



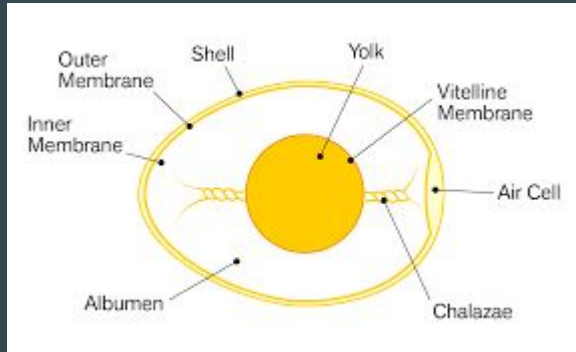
# The Egg White (Albumen)

- As the yolk travels through the oviduct, the next layer, the egg white (albumen), forms around it. This stage takes around three hours. The albumen cushions and nourishes the developing embryo if the egg is fertilized.



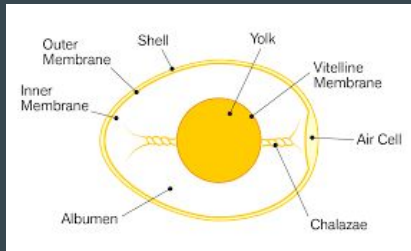
# The Shell Membrane

- Following the albumen, the shell membrane forms around the egg. This thin layer takes about 1.25 hours to develop and lies between the egg white and the outer shell. If you've ever cracked an egg and found the contents held together by a thin, tissue-like layer, that's the shell membrane in action.



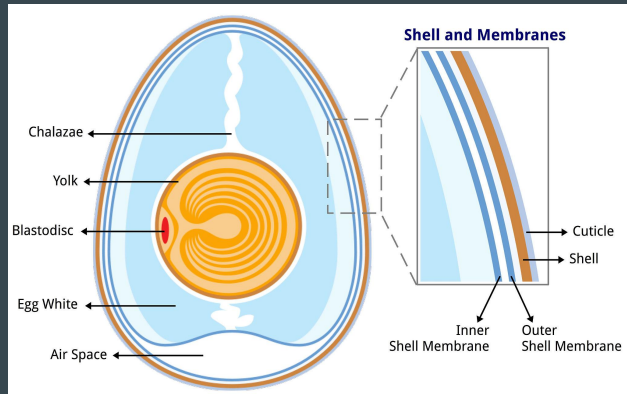
# The Shell

- The egg then moves into the hen's uterus, also known as the shell gland, where the hard shell forms over approximately 19 hours. During this time, pigments are also added to the shell. Initially, all eggshells are white. Depending on the breed of chicken, the shell can turn blue or brown.
- Brown Eggs: The brown pigment is added last, coating only the surface of the egg. This is why the inside of a brown egg's shell is white.
- Blue Eggs: The blue pigment is incorporated early, permeating the entire shell. Consequently, the inside of a blue egg's shell is blue.
- Green Eggs: These result from a combination of blue and brown pigments.
- White Eggs: These lack pigmentation entirely.



# The Bloom

- The final step in egg formation is the addition of the bloom, or cuticle. This protective layer is applied after the egg leaves the uterus, just before it exits the hen's vent. The bloom acts as a barrier against bacteria and helps maintain the egg's moisture, ensuring the egg remains fresh for a longer period.



# What are the Embryo stages?

- The embryology of the chicken is the development of the chicken inside of the egg. Hatchery managers need to be able to differentiate between normal and abnormal embryos and identify possible causes of embryo mortality during incubation.



# First week

DAY 1: Appearance of embryonic tissue.

DAY 2: Tissue development very visible. Appearance of blood vessels.

DAY 3: Heart beats. Blood vessels very visible.

DAY 4: Eye pigmented.

DAY 5: Appearance of elbows and knees.

DAY 6: Appearance of beak. Voluntary movements begin.

DAY 7: Comb growth begins. Egg tooth begins to appear.

## Second week

DAY 8: Feather tracts seen. Upper and lower beak equal in length.

DAY 9: Embryo starts to look bird-like. Mouth opening occurs.

DAY 10: Egg tooth prominent. Toe nails visible.

DAY 11: Cob serrated. Tail feathers apparent.

DAY 12: Toes fully formed. First few visible feathers.

DAY 13: Appearance of scales. Body covered lightly with feathers.

DAY 14: Embryo turns head towards large end of egg.

# Third Week

DAY 15: Gut is drawn into abdominal cavity.

DAY 16: Feathers cover complete body. Albumen nearly gone.

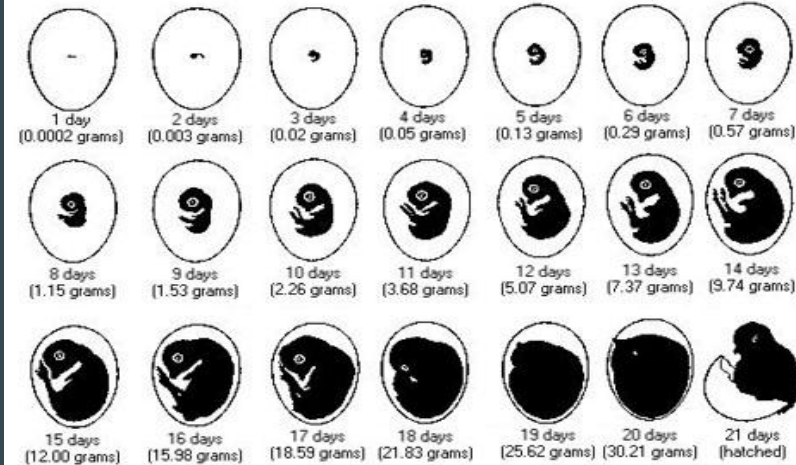
DAY 17: Amniotic fluid decreases. Head is between legs.

DAY 18: Growth of embryo nearly complete. Yolk sac remains outside of embryo. Head is under right wing.

DAY 19: Yolk sac draws into body cavity. Amniotic fluid gone. Embryo occupies most of space within egg (not in the air cell).

DAY 20: Yolk sac drawn completely into body. Embryo becomes a chick (breathing air with its lungs). Internal and external pipping occurs.

# Embryo Development



DAILY CHANGES IN THE WEIGHT AND FORM  
OF THE DEVELOPING CHICK EMBRYO (WHITE LEGHORN)



## CHICK EMBRYO DEVELOPMENT



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