

# The Egg



BFST 2203

Food Proteins and Hydrocolloids

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# Introduction

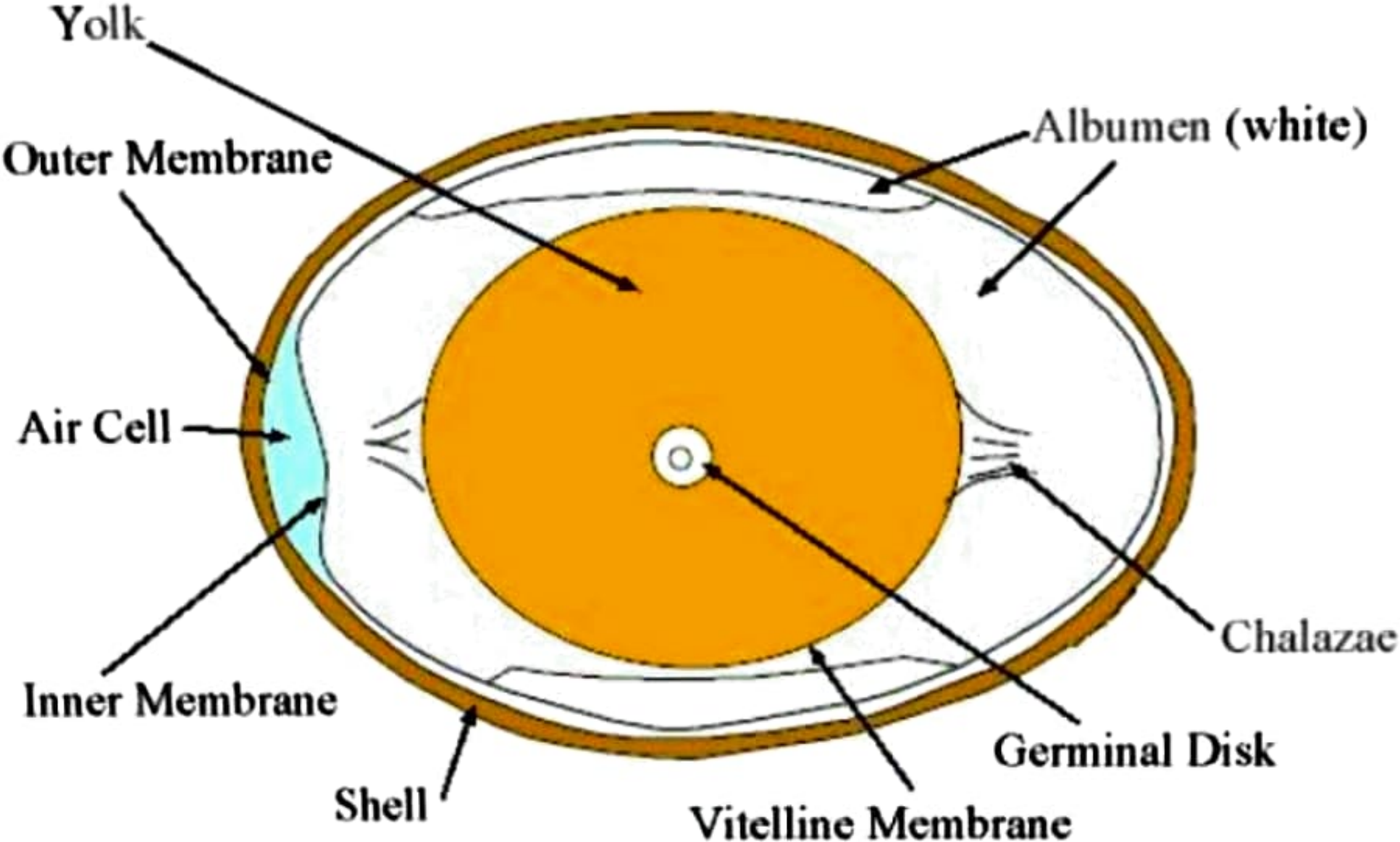
- Eggs are laid by female animals of many species including birds, amphibians, reptiles and fish
- Chicken eggs are the most popular choice of egg consumption
- They are an inexpensive source of protein
- Used as a reference standard against which all other protein containing foods are assessed

# Structure of an Egg

**An egg basically consists of three parts:**

- **Shell**
- **Egg white**
- **Egg yolk**

# Structure of an Egg



# Structure of an Egg

## Eggshell

- The outer eggshell is made almost entirely of calcium carbonate ( $\text{CaCO}_3$ ) and is covered with as many as 17,000 tiny pores.
- It is a semipermeable membrane, which allows air and moisture to pass through its pores.
- The shell also has a thin outermost coating called the bloom or cuticle that helps keep out bacteria and dust .

## Outer and inner shell membrane

- These two membranes are inside the shell surrounding the albumen (white).



# Structure of an Egg

- The two membranes are made partly of keratin and provide an efficient defense against bacterial invasion.
- The outer membrane sticks to the egg shell while the inner membrane sticks to the albumen.

## Chalazae

- Strands that are twisted in opposite directions and anchor the yolk in center of the egg. The more prominent the chalazae, the fresher the egg.

## Exterior albumen (outer thin albumen)

- The outer thin albumen; a narrow fluid layer next to the shell membrane.

# Structure of an Egg

## Yellow yolk

- The yolk contains less water and protein than the white, some fat, and most of the vitamins and minerals of the egg.
- It is also a source of lecithin; an effective emulsifier.
- Yolk color ranges from just a hint of yellow to a magnificent deep orange, according to the feed and breed of the hen.

## Air cell

- An air space forms when the contents of the egg cool and contract after the egg is laid.



# Protein Content of an Egg

- Protein content of an egg accounts to about 12.6% by weight of the edible portion

## Distribution of proteins in an egg

Egg white                      57%

Egg yellow                    43%

## and Egg Yellow

### **Egg White**

- Egg white consists of about 90% water in which about 10% of proteins is dissolved.
- Egg white is an alkaline solution which contains approximately 40 different proteins.

