Egg Cookery Lesson

GRADE 10

DATE: MARCH 29,2020

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INSTRUCTIONS

Please go through and read each slide of the PowerPoint presentation attached to this email. There are a few fun activities to do at the end please send me pictures of the activities when you have completed them to my email address (ssblake@live.com) by no later than **Friday April 3, 2020**.

Please email me with any questions you may have, my phone has decided to just stop working.

Regards,

Ms.S. Blake

Objectives:

- Define Egg
- State at least four ways egg can be incorporated in the diet
- Categorize eggs into three classes
- Observe the freshness of egg through the brine test and plate test
- Nutritive value of eggs
- Analyse the structure and composition of an egg
- Label a diagram of an egg
- Design a poster to mount in your room by drawing the following: Egg Composition with labelled parts, Brine Test and Plate

Definition of Eggs

- An oval or round object laid by a female bird, usually containing a developing embryo. The eggs of birds are enclosed in a chalky shell.

Usage of Eggs

- Main Protein/Main Dish
- To add nutritive value and taste to other dishes (examples: Fried Rice Eggnog)
- Binding Agent
- Add colour example egg wash placed on pastries
- Incorporate air in batters (Raising Agent)
- Acts as an **Emulsifier** An emulsion is a mixture of two or more liquids that are normally immiscible. Emulsions are part of a more general class of two-phase systems of matter called colloids. (example; Mayonaise)

Dish as a Main Dish

Omelette

Egg in Baking

Whipping to incorporate Air and make the product more tender

YouTube Clip

- Click link below to view the whisking method for baking using eggs.

- https://www.youtube.com/watch?v=zhuRyq7NrcA

Egg as a Binding Agent

BINDING AGENT

Eggs act as a binding agent that hold ingredients together.

An example of this is **meatloaf.** The egg protein coagulates during the cooking and keeps the meat, bread crumbs, and onions together in a loaf.

Meat Balls

Adds Colour to Baked Goods – Egg Wash

- Egg wash helps give a golden brown sheen to soft bread like dinner rolls, Danish pastry, cinnamon rolls, brioche, and challah.

Basic Egg Wash Recipe

- Use the following procedure to make an egg wash:
- Crack an egg into a bowl and beat it thoroughly with a whisk.
- Add 2 tablespoons of water and a pinch of salt. Stir until combined
- Brush the egg wash onto the surface of your item.

Egg as a Emulsifier

- In simple form water and oil cannot be mixed together, however eggs can help them to both mix together smoothly. Example the making of mayonnaise

Usage of Eggs Continues

Thickeners

- Heat causes the protein in eggs to **coagulate** (thicken)
- Eggs can be used alone as the thickening agent or used with starch
- Example:

Thickening Agent

Pudding

Custard

Grade of Eggs

- Knowing the grade of eggs will help you while shopping for eggs
- Grade of eggs, AA, A, or B, is determined by the interior quality of the egg and appearance/condition of the shell.

Grade AA	Grade A	Grade B
		
Egg content covers a small area. White is firm, has much thick white surrounding the yolk and a small amount of thin white. The yolk is round and upstanding.	Egg content covers a moderate area. White is reasonably firm and has a considerable amount of thick white and a medium amount of thin white. The yolk is round and upstanding.	Egg content covers a very wide area. White is weak and watery, has no thick white and the large amount of thin white is thinly spread. The yolk is enlarged and flattened.

How to Test for the Freshness of Eggs

- Using Brine Solution- which is salt and water (Called Cup Test)

How to Test for the Freshness of Eggs

Testing Eggs: 5

5- Break and See Texture.

- Crack the egg open on a plate and check the quality of the yolk and white.

How to Test for the Freshness of Eggs

- Visual inspection

Sometimes an egg will look or feel off. A person should check for signs of possible contamination or rottenness.

People should discard eggs with any of the following characteristics:

cracks in the shell

a powdery substance on the shell

a shell that looks or feels slimy or too smooth

Eggs with cracked or slimy shells may have become contaminated with bacteria, while a powdery substance on the shell can be a sign of mold.

Nutritive value

- **Protein:** Good source of protein.
- **Fat:** Saturated fat in yolk, easily digested.
- **Carbohydrates:** None present.
- **Vitamins:** A, D and B.
- **Minerals:** Calcium, phosphorus and iron.
- **Water:** High proportion of water.

Nutritive Value of Egg

Yolk

- 55 calories
- 3g protein
- 5g fat
- 90% of vitamins and minerals e.g. calcium, iron, zinc and phosphorus.

White

- 17 calories
- 4g protein
- 0g fat
- Niacin and riboflavin. All other vit & mins are in the yolk.

Nutritional Value of Eggs

- MyPyramid:
  - 5-7 ounces equivalent/day of protein
  - one egg counts as 1 ounce
- Complete Protein
- Iron, vitamin A, vitamin D, phosphorus, calcium, thiamine, and riboflavin
- Cholesterol: eggs whites are cholesterol free

Eggs are composed of three main parts

- Eggs are composed of three main parts
- Shell
- Egg white
- Egg yolk
- Shell

The shell is approximately 10% of the egg. This is a brittle porous outer covering made of calcium carbonate. The porous allow the passage of air and moisture from the atmosphere and this contributes to the deterioration process.

At the end of the egg, the membranes separate into an air space, to supply the chick with oxygen

- White

Egg white has two visible layers: the thick white (nearest to the yolk) and the thin white (nearest to the shell) The white is approximately 60 % of the egg. Of this 90% is water and 10% protein in the form of ovalbumin and ovoglobulin. It is high in riboflavin content but contains no thiamine. Sulphur is also present.

- Yolk

The yolk is 30% of the egg and is extremely nutritious. It contains 50% water, 17% protein and 33% fat, calcium, phosphorus, iron, Sulphur, vitamins A, D and the B-complex group. The protein is mostly ovalbumin and ovoglobulin. The yolk is supported by the chalazae which are attached to the egg white.

COMPOSITION

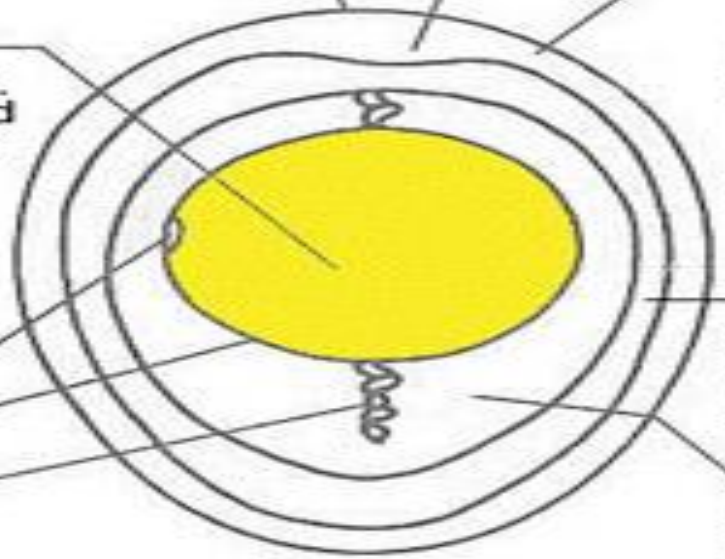
Shell
- Outer covering of egg, composed largely of calcium carbonate
- May be white or brown depending on breed of chicken.
- Color does not effect egg quality, cooking characteristics, nutritive value or shell thickness

Yolk
- Yellow portion of egg.
- Color varies with feed of the hen, but doesn't indicate nutritive content
- Major source of egg vitamins, minerals, and fat

Germinal Disc

Vitelline (Yolk) Membrane
- Holds yolk contents

Chalazae
- Twisted, cordlike strands of egg white
- Anchor yolk in center of egg.
- Prominent chalazae indicated freshness



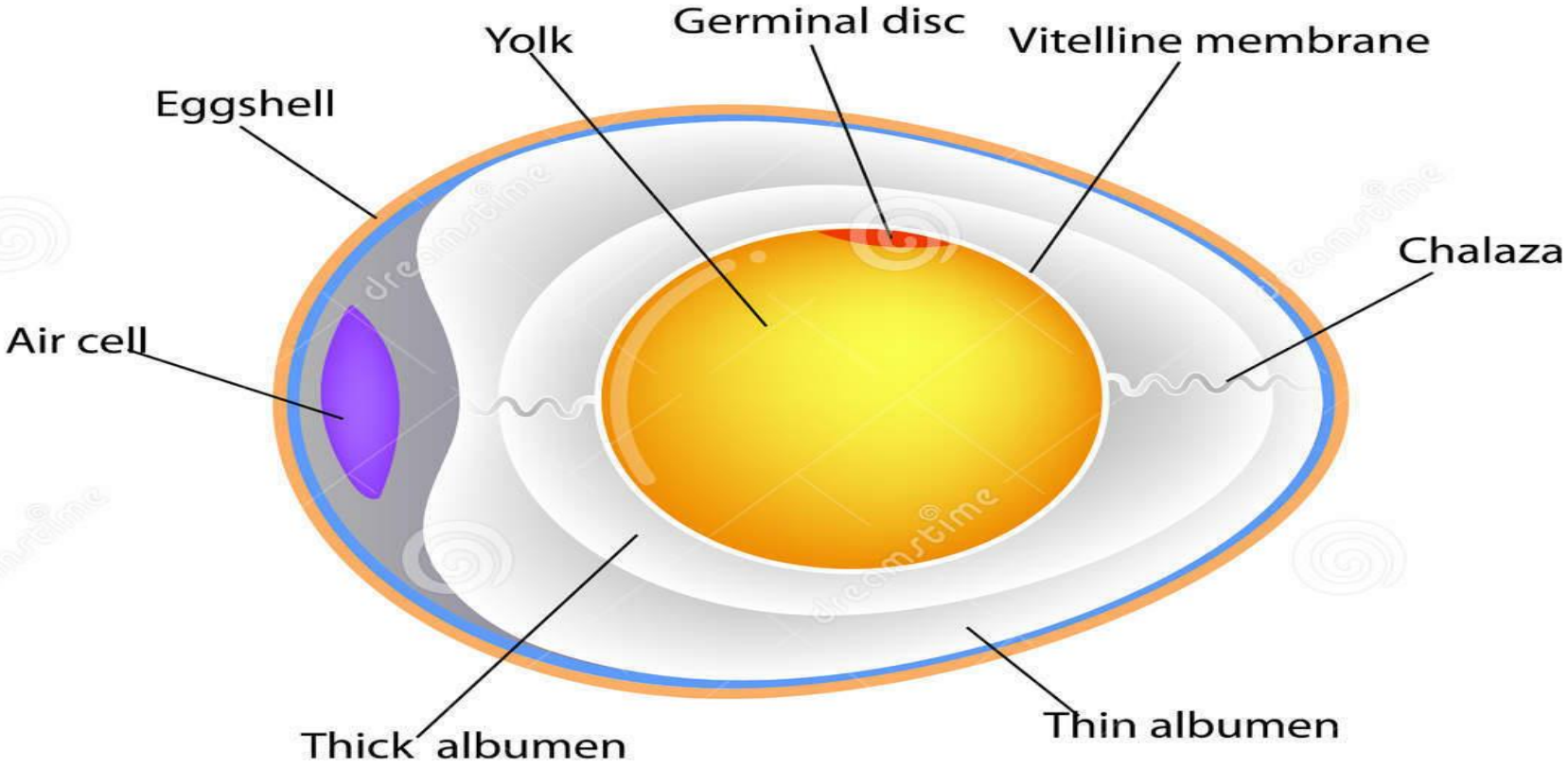
Air Cell
- Pocket of air formed at the large end of egg
- Caused by contraction of the contents during cooling after laying
- Increases in size as egg ages

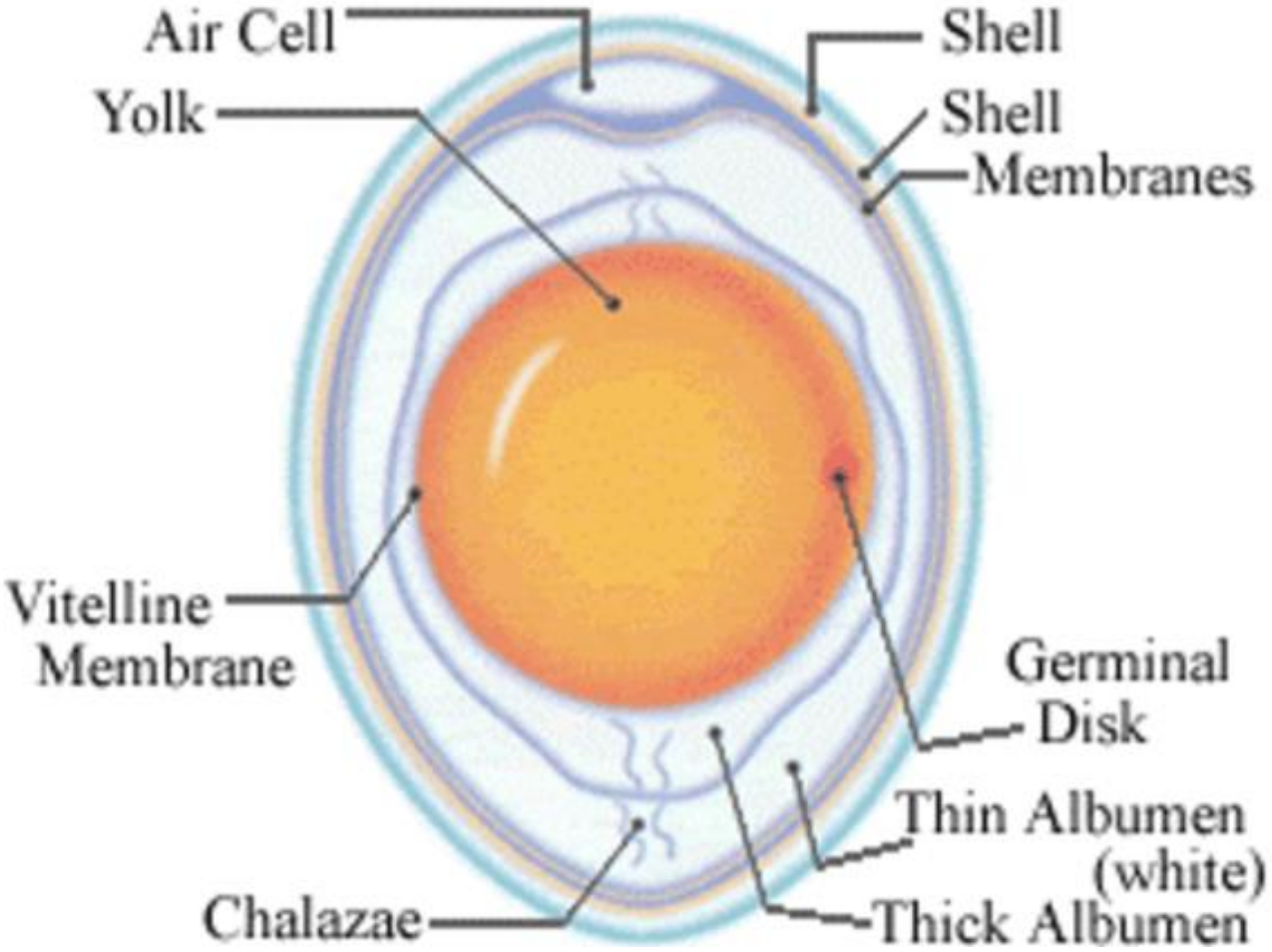
Shell Membranes
- Two membranes-inner and outer shell membranes surround the albumen
- Provide protective barrier against bacterial penetration
- Air cell forms between these two membranes

Thin Albumen (White)
- Nearest to the shell.
- Spreads around thick white of high-quality egg

Thick Albumen (White)
- Major source of egg riboflavin and protein.
- Stands higher and spreads less in higher-grade eggs
- Thins and becomes indistinguishable from thin white in lower-grade eggs

Chicken Egg Anatomy




Air Cell
Yolk
Shell
Shell
Membranes
Vitelline
Membrane
Germinal
Disk
Thin Albumen
(white)
Chalazae
Thick Albumen

How to Store Eggs

- Methods of Storage
- Short Periods

Eggs should be stored in an egg container in the refrigerator with blunt end up; this is to prevent the air space from rupturing and ensure that the yolk remains in position. They should not be placed near moisture or strong-smelling foods, as their shells are porous. Eggs should be used within 14 days after purchase.

- Long Periods
- - Drying
- - Freezing
- Changes during storage

- The air cell becomes enlarged because there is a loss of moisture.
- The porous shell allows passage of air, moisture and bacteria, which will contribute to the deterioration of the egg.
- There is loss of carbon dioxide, which will cause the egg white to become more alkaline and therefore thinner, and spread more when the egg is broken.
- The white will become yellow and cloudy.
- The vitelline membrane around the yolk stretch and the yolk flattens.

Activity

- Use an egg at home to do the Brine Test and Plate to check for freshness
- examine the shell for the air space and chalky texture
- Create a poster with the brine test and plate test also on to indicate nutritive value and mount your creation in your room.

Thank you

- The End!