

## **Eggs.....They Really are Incredible**

### Participant Handout

#### **Important Egg Facts**

- 1. Eggs are nutrient rich.** They provide protein, vitamin A, riboflavin, and other vitamins and minerals.

Brown, white, and green eggs have the same nutritional value. The color of the egg is determined by the breed of the chicken.

The yolk contains all unsaturated and saturated fat and as well as cholesterol (213 milligrams in a large egg yolk). The yolk has about 60 calories and the white has about 15 calories. Eggs contain all the essential amino acids in proportions that are close to matching the amounts that humans need.

Eggs contribute Choline, a recently recognized essential nutrient that contributes to fetal brain development and nerve tissue development - which helps prevent birth defects. They also contain Lutein -- a nutrient that is part of the carotenoid family (like beta-carotene in carrots) that contributes to eye health and helps prevent common causes of age-related blindness.

The American Heart Association recommends consuming no more than 300 milligrams of dietary cholesterol daily. Research is being conducted to see if dietary cholesterol raises the level of cholesterol in the blood. Dietary fat appears to have a more significant effect on raising blood cholesterol levels.

People with high serum cholesterol levels who are sensitive to dietary cholesterol may need to strictly limit their egg yolk consumption. **All individuals need to follow the advice of their health care provider.**

- 2. Most eggs are packed to USDA quality weight (size) standards.**

The size is printed on the egg carton and tells the minimum required net weight per dozen eggs. It doesn't refer to the dimensions of the egg or how big it looks. Most published recipes are based on large-size eggs.

- 3. Most eggs are packed according to USDA Quality Grade standards.**

The grade is printed on the egg carton. Three grades are available: AA, A & B. The AA & A grades are available at stores. B quality is used in commercial baking. The grade is determined by the interior quality of the eggs and the appearance and the condition of the egg shell.

AA - whites are thick and firm, yolks are high, round and free from defect, clean unbroken shells.

A - whites are reasonably firm, yolks are high and round

B - whites are thinner and yolks are wider and flatter

**4. Fresh eggs can be stored in their original cartons in the refrigerator up to about 4 to 5 weeks beyond the pack date without significant quality loss.**

Place them in the coldest part of the refrigerator, not in the door. Don't wash the eggs. Washing can remove the protective mineral oil coating and increases the potential for bacteria on the shell to enter the egg. Egg quality changes during storage. Refrigeration slows the loss of quality.

**5. Eggs should be handled safely.**

The major food safety concern is Salmonella bacteria, which cause food borne illness. Salmonella may be found on the outside of the egg shell because the egg exits the hen's body through the same passage as feces are excreted. To counter this possibility, eggs are washed and sanitized at the processing plant. Salmonella can also be inside the uncracked, whole egg. Contamination of eggs may be due to bacteria within the hen's ovary or oviduct before the shell forms around the yolk and white. The chance of a raw egg being infected this way is 1 in 200,000.

To avoid food safety concerns:

- Cook all foods containing eggs thoroughly (to 160° F. measured by a food thermometer)
- Cook eggs until the white is firm and the yolk is thick but not hard. Scrambled eggs should be cooked until no visible liquid remains.
- Do not reuse egg cartons other than to store raw eggs; i.e., don't use for crafts or storage of hard-cooked eggs.
- Wash hands, utensils, equipment and work areas with hot, soapy water before and after coming in contact with eggs and egg-containing foods.
- Do not let cooked eggs, including hard-boiled eggs and egg-containing foods, sit out of refrigeration for more than 2 hours.
- Do not eat raw eggs or products made with raw eggs, such as homemade eggnog, ice cream or cookie dough.
- If making ice cream, eggnog, mayonnaise, or egg-based sauces, use recipes that start with a stirred egg custard base that is first cooked to 160° F.

**6. Specialty Eggs**

In an effort to reach a wider consumer base, producers are marketing a variety of specialty eggs. Due to higher production cost, the consumer will pay extra for these additional features.

**Nutritionally enhanced:**

The nutrient content of the egg can only be changed by altering the feed of the hen.

Lower Fat and Cholesterol: Lowering cholesterol and the ratio of saturated to unsaturated fat in eggs is done by feeding the chickens all-vegetarian diets that are high in canola oil. To market an egg as being lower in cholesterol or saturated fat, it must have 25% less of the nutrient in question than the standard large egg.

Omega-3 The type of fatty acids found in the yolk of the egg is directly related to the type of fat fed to the chicken. Adding products high in Omega-3 fatty acids (such as flaxseed, marine algae, fish and fish oil) to the feed can increase the Omega-3 fatty acids in egg yolks. Omega-3 is important for optimal development of an infant's brain and eyes. These fats also have many other important benefits, including helping to reduce the risk of arteriosclerosis and stroke.

Lutein This nutrient has been shown to reduce the risk of macular degeneration, the leading cause of blindness in people 65 and older. Birds raised on diets that include marigold extract produce eggs high in lutein. New research is showing that lutein from eggs is better absorbed by the body than is lutein from other sources.

### **Other specialty eggs:**

Organic eggs are produced by hens given feed grown without most conventional pesticides, fungicides, herbicides, or commercial fertilizers. The use of growth hormones is also prohibited but they are not used in any commercial operation in the United States.

Vegetarian eggs are produced by hens whose feed is free of animal by-products.

Pasteurized shell eggs have been heat treated to kill potential Salmonella bacteria found inside the egg. Due to the heat processing, these eggs may have slightly lower levels of heat-sensitive vitamins.

Fertile eggs are produced from a hen that has possibly mated with a rooster. There is no nutritional difference between fertile eggs and generic eggs.

Free-range eggs come from hens that are either raised outdoors or have access to the outdoors. Because of weather, most hens are not actually raised outdoors and access to the outdoors can vary greatly.

Cage-free eggs come from hens that are not raised in cages. Instead they live on the floor or in the hen house. These hens do not necessarily have access to the outdoors.

The nutrient content of free-range and cage-free eggs is the same as for those produced by hens housed in cages.

## **7. Cooking with Eggs**

Egg protein changes when heated, beaten or mixed with other ingredients. Understanding the changes can help you understand the role of eggs in food preparation.

## **Heating eggs**

Remember two basic rules when cooking eggs:

- Do not use excessive heat; medium to low is the ideal temperature
- Do not prolong the cooking period

If eggs are cooked at too high a temperature for too long, the protein can become tough and rubbery. When eggs are cooked too long, the liquid is cooked out and curdling or weeping occurs.

## **Hard cooking eggs**

The recommended method for hard cooking eggs is:

- 1) Place eggs in single layer in saucepan. Add enough tap water to cover at least one inch above the eggs.
- 2) Cover pan. Quickly bring water just to boiling. Turn off the heat.
- 3) Remove the pan from burner to prevent further boiling. Let eggs stand covered in hot water about 12 minutes for medium eggs, 15 minutes for large eggs and 18 minutes for extra large eggs.
- 4) Immediately run cold water over eggs or place them in ice water until completely cooled.

## **Microwaving eggs**

Because of the protein, eggs are hard to cook well in the microwave. The microwaves are attracted to the fat content of the yolk, so it cooks faster than the white. When cooking an egg in the microwave:

- Steam will build up under the yolk membrane, so before cooking, break the unbeaten yolk by pricking with a wooden toothpick or a tip of a knife.
- For slow heating, use 50% to 30% power with unbeaten eggs and cover the container for more even cooking.
- Never cook an egg in its shell; it will explode.

## **Beating eggs**

When egg whites are beaten, they incorporate countless air cells, increasing the volume six to eight times. During the beating, protein molecules surround the air bubbles and coagulation starts. When the foam is heated, the air bubbles expand and the protein further coagulates and stabilizes the foam.

For good quality foams, keep these tips in mind:

- Even tiny bit of fat will keep whipped egg whites from reaching their full volume
- Since yolks contain fat, it is important to separate the eggs carefully
- Adding an acid ingredient such as cream of tartar, vinegar or lemon juice before beating will stabilize the foam
- Salt decreases foam stability; add it to other ingredients
- Sugar stabilizes the beaten eggs
- Use beaten egg whites soon after beating, if they stand for more than 5 minutes or so, they will turn back into liquid as the air escapes.

### **Mixing with other ingredients**

Eggs have many uses in foods. For example, egg yolks are used as emulsifiers to keep oil and water from separating. When the egg protein is mixed thoroughly with oil and water, one part of the protein sticks to the water and another part will stick to the oil. The egg yolk stabilizes the two mixtures. Mayonnaise is an example

Eggs also serve as a binder and a thickening agent. Whole raw eggs add moisture to a mixture and hold the ingredients together. As the food is heated, the egg protein coagulates and binds the ingredients together. Examples are binding of meat loaf and thickening of custards and sauces.

Eggs are also used to leaven (muffins, cakes) and to coat (breads and cookies).

### **Additional information and recipe ideas can be found at the following sites:**

American Egg Board: <http://www.aeb.org/>

Egg Nutrition Center: <http://www.enc-online.org/>

American Council on Science and Health: <http://www.acsh.org/>

USDA Food Safety and Inspection Service: [http://www.fsis.usda.gov/Fact\\_Sheets/](http://www.fsis.usda.gov/Fact_Sheets/)

Iowa Egg Council: <http://www.iowaegg.org/>

USDA American Marketing Service: <http://www.ams.usda.gov/poultry/consumer/>

Oregon State University Food Resource: <http://food.oregonstate.edu/egg.html>

University of Nebraska: <http://lancaster.unl.edu/food/ciq-egg-dates.htm>

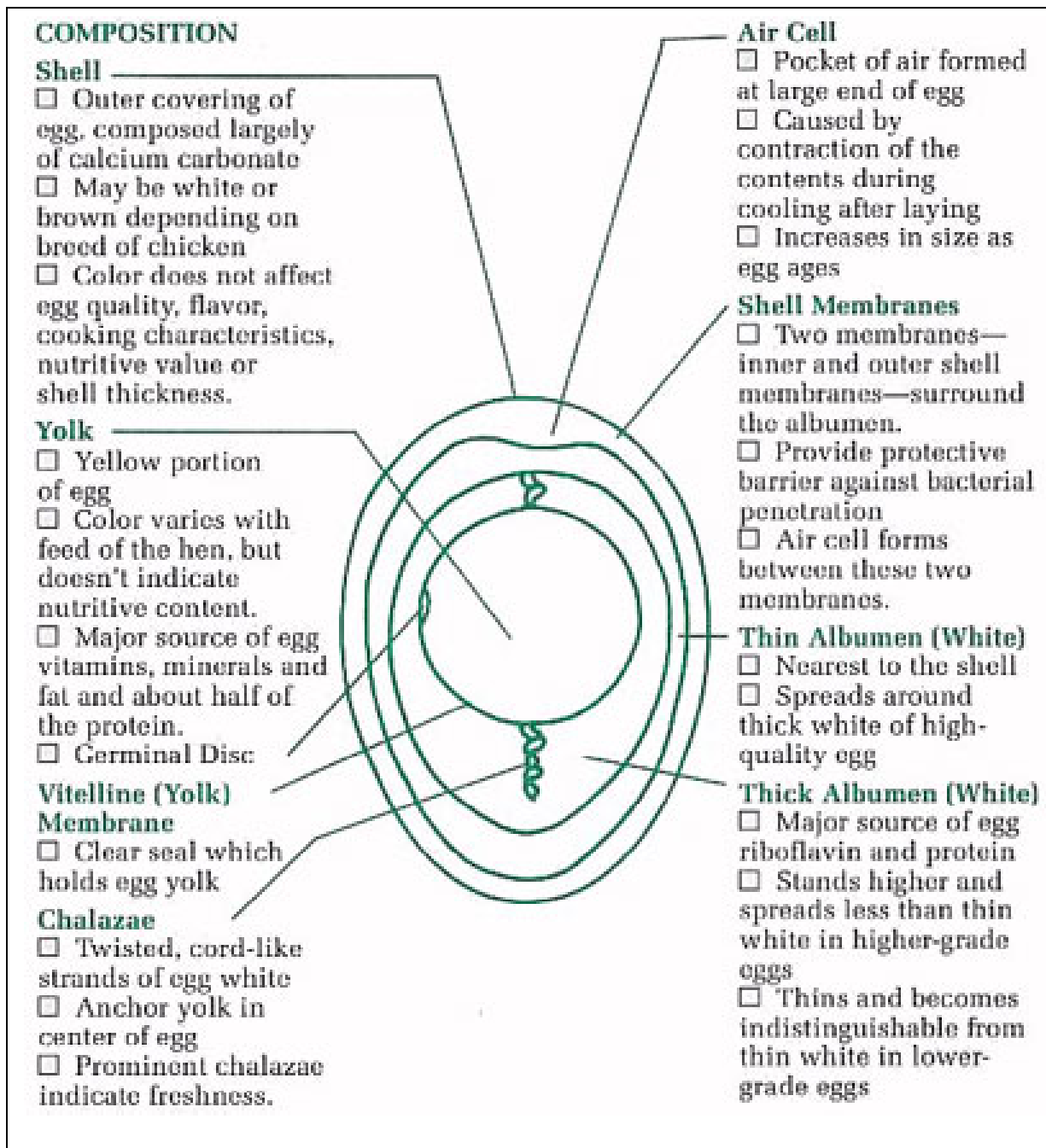
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# Parts of the Egg



Source: American Egg Board, printed with permission, October 2007

## ALASKA SALMON BRUNCH FRITTATA

Serves 6

Cooking spray

1 small bell pepper, cored and chopped

1/2 cup chopped onion

1 clove garlic, minced

1 can (14.75 oz.) salmon

6 eggs

1/3 cup non-fat milk or water

2 teaspoons Mexican, Taco, or Fajita seasoning

1/3 cup low-fat shredded Cheddar or Jack cheese

1-1/2 cups chunky salsa

Preheat oven to 400°F. Spray-coat a 10-inch nonstick pan. Stir in bell pepper, onions, and garlic; sauté two minutes over medium heat. Add salmon. Beat together eggs, milk or water, and seasoning; pour over vegetables in pan. Cook over medium-low heat, omelet-style, until sides are set, about 4 to 5 minutes. Sprinkle on cheese. Transfer pan to oven about 5 inches from heat, covering handle with foil if necessary. Bake an additional 5 minutes, or until frittata is puffy and eggs are firm in the center. Cut into wedges; serve each slice with 1/4 cup salsa.

Source: Alaska Seafood Marketing Institute

<b>Nutrition Facts</b>			
Serving Size 1 wedge (233g)			
Servings Per Container			
<b>Amount Per Serving</b>			
<b>Calories 210</b>		<b>Calories from Fat 80</b>	
% Daily Value*			
<b>Total Fat</b> 9g			<b>14%</b>
Saturated Fat 2.5g			<b>13%</b>
Trans Fat 0g			
<b>Cholesterol</b> 270mg			<b>90%</b>
<b>Sodium</b> 700mg			<b>29%</b>
<b>Total Carbohydrate</b> 6g			<b>2%</b>
Dietary Fiber 1g			<b>4%</b>
Sugars 2g			
<b>Protein 25g</b>			
Vitamin A 8%	•	Vitamin C 25%	
Calcium 30%	•	Iron 10%	
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:			
	Calories	2,000	2,500
Total Fat	Less Than	65g	80g
Saturated Fat	Less Than	20g	25g
Cholesterol	Less Than	300mg	300 mg
Sodium	Less Than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g
Calories per gram:			
	Fat 9	•	Carbohydrate 4 • Protein 4

## BASIC PLAIN OMELET

- 2 eggs
- 2 tablespoons water
- 1 teaspoon cooking oil

1. In a small, beat eggs and water until well blended.
2. Heat an 8 inch omelet or skillet on medium-high; add the oil. Heat until the oil is hot enough to sizzle a drop of water.
3. Pour in egg mixture – the mixture should set immediately around the edges.
4. With a turner, push the cooked portions toward the center, so the uncooked portions can reach the hot pan surface. Tilt the pan and move the cooked portions as needed.
5. When no visible liquid egg remains, add your favorite filling (cooked meats, vegetables, fruits, cheese) on one half side of the omelet.
6. Using a pancake turner, fold the omelet in half.
7. Invert or slide the omelet onto a plate and serve at once.

Source: adapted from Dr. Ken Holoman, Professor Emeritus, OSU Poultry Specialist

<b>Nutrition Facts</b>	
Serving Size 1 omelet (134g)	
Servings Per Container	
<b>Amount Per Serving</b>	
<b>Calories</b> 190	Calories from Fat 130
% Daily Value*	
<b>Total Fat</b> 14g	<b>22%</b>
Saturated Fat 3.5g	<b>18%</b>
Trans Fat 0g	
<b>Cholesterol</b> 425mg	<b>142%</b>
<b>Sodium</b> 140mg	<b>6%</b>
<b>Total Carbohydrate</b> 1g	<b>0%</b>
Dietary Fiber 0g	<b>0%</b>
Sugars 1g	
<b>Protein</b> 13g	
Vitamin A 10%	• Vitamin C 0%
Calcium 6%	• Iron 10%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories    2,000    2,500
Total Fat	Less Than 65g    80g
Saturated Fat	Less Than 20g    25g
Cholesterol	Less Than 300mg    300 mg
Sodium	Less Than 2,400mg    2,400mg
Total Carbohydrate	300g    375g
Dietary Fiber	25g    30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	