



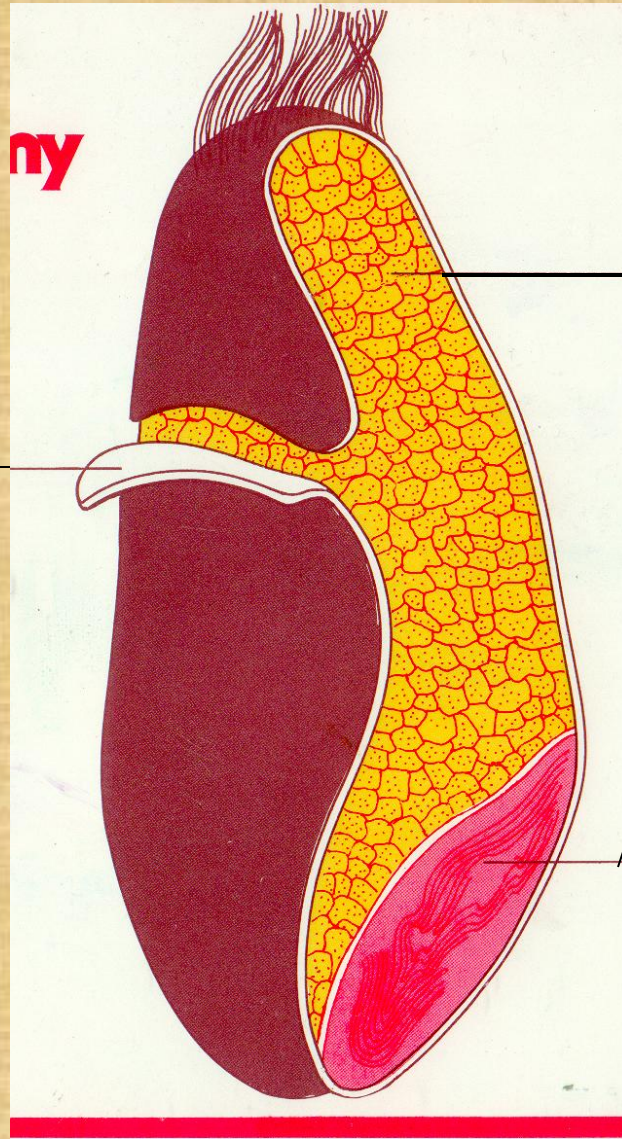
Grains

Grains

- Definition: single, hard seed
- Most common grains
 - Wheat
 - Corn
 - Rice



The Anatomy of a Grain



Bran –

The outer layer. It contains B-vitamins, Iron, Protein, and Fiber

Endosperm –

Composed mostly of Carbohydrates and some protein. What is left when the grain is refined.

Germ –

Contains the future plant. The main nutrients are Thiamin, Riboflavin, and Niacin (B-vitamins)

W h e a t

DIET: WHAT ARE WHOLE GRAINS?

Whole grains include grains like wheat, corn, rice, oats, barley, quinoa, and rye. A whole grain contains all three parts of the kernel. Refining grain typically removes the bran and the germ, leaving only part of the endosperm. Without the bran and germ, about 25% of wheat's protein is lost, along with at least 17 key nutrients.

Processors add back some vitamins and minerals to enrich refined grains, but whole grains are healthier, providing more protein, more fiber and many important vitamins and minerals.

SECTION OF A GRAIN OF WHEAT

KERNEL

Whole grains make up the seed of a plant.

BRAN

The outer skin that protects the core from sunlight and pests.

Health benefit: Antioxidants, B vitamins and fiber

ENDOSPERM

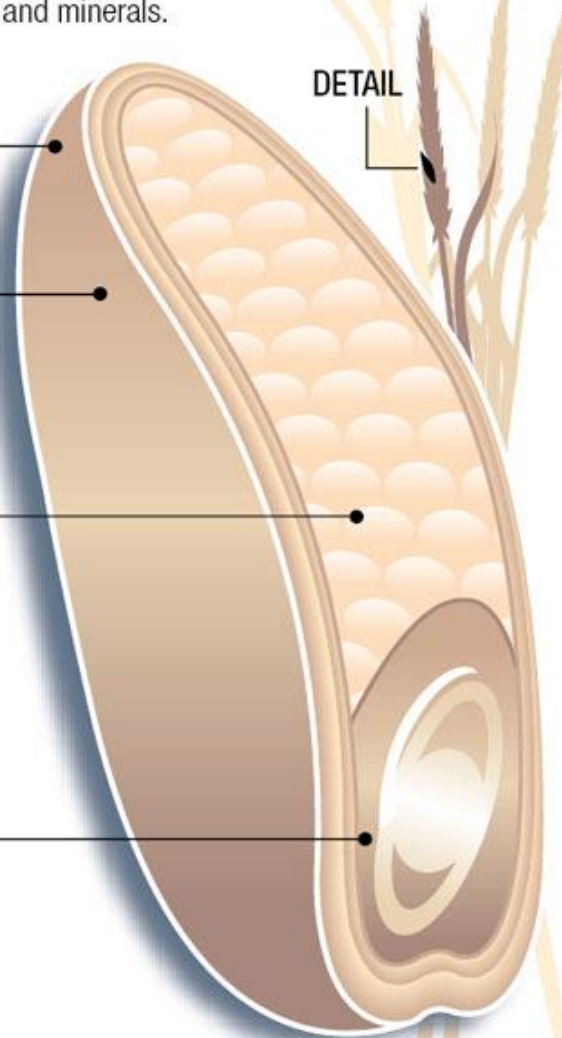
A seed's food supply. This is where starch is stored and in wheat, where the largest amount of flour comes from.

Health benefit: Starchy carbohydrates, proteins, vitamins and minerals

GERM

Embryo that will sprout into another plant if fertilized by pollen.

Health benefit: B vitamins, proteins, minerals and healthy fats



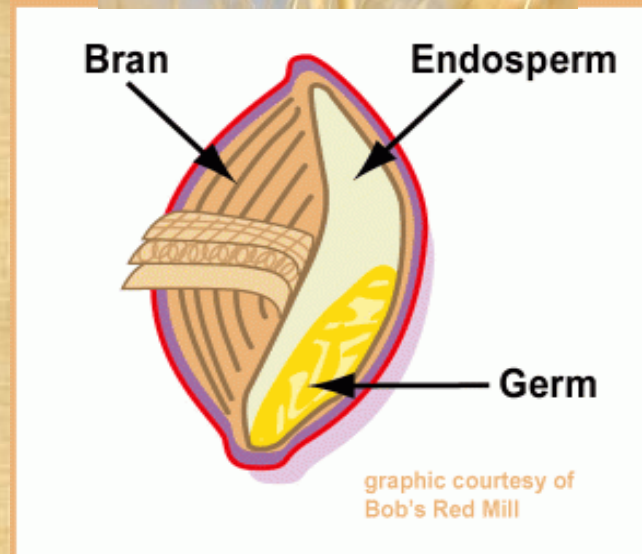
Kernel of Wheat

HUSK



What's a Whole Grain?

- Whole Grains: Made from entire kernel including bran, germ, endosperm.
- Refined grains: Milled so germ and bran are removed.
- Enriched: Adding nutrients lost during the processing of the grain back into the finished product ex. White flour.



Why do Whole Grains Matter?

- Diets rich in whole grain foods and other plant foods, and low in saturated fat and cholesterol, may help reduce the risk of **heart disease**
- Consuming at least 3 or more ounce-equivalents of whole grains per day can reduce the risk of several chronic diseases and may help with **weight maintenance**
 - High fiber
 - Low fat
 - More calcium
 - High in B Vitamins
 - Rich Sources of Minerals

Wheat Types



- **Common Wheat:** used for flour
- **Durum Wheat:** type of wheat with high protein and gluten contents
 - **Semolina:** Endosperm only of Durum wheat
 - **Couscous:** Granular form of semolina
 - **Bulgur:** cracked durum wheat that has been parboiled, dried, then cracked
- **Spelt:** Type of wheat



Other Grains

Less Popular

- Barley
- Oats
- Rye

Uncommon Grains

- Quinoa
- Kamut
- Amarantha
- Buckwheat

Less Popular Grains

Barley

- Barley contains all eight amino acids
- According to a recent study, eating whole grain barley can regulate blood sugar for up to 10 hours after consumption



Oats

- Oats contain more soluble fiber than any other grain, resulting in slower digestion and an extended sensation of fullness
- Oats soluble fiber lower bad cholesterol therefore decreasing your risks of heart disease.



Less Popular Grains

Rye

- Commonly made into flour for rye bread
- **Triticale:** hybrid grain that is a cross between wheat and rye



Uncommon Grains

Kamut

- Larger seed size in comparison to wheat
- Contains 30-40% more protein than wheat



Quinoa

- Seeds that are covered in bitterness preventing insect/bird damage
- High protein content (12-18%); complete protein (balanced set of amino acids)



Uncommon Grains

Amaranth

- have a 30% higher protein value than other cereals, such as rice, wheat flour, oats, and rye
- Contains a complete protein and a high amount of manganese



Buckwheat

- contains no gluten;
- is not related to wheat
 - **Kasha:** *roasted* buckwheat that's ground or cracked



Processing Grains

- **Berries:** whole grain minus the hull
- **Flour:** ground into fine powder
- **Rolled = Flaked:** flattened between rollers
- **Cracked:** cut into small pieces to speed up cooking time
- **Pearled:** bran removed and tumbled

Rice

Worldwide there are more than 40,000 different varieties of rice!



Basic Categories of Rice

- **Long grain Rice-** Long, polished kernels. Bland and somewhat firm in texture. Yields a drier, fluffy rice.
 - Ex. Basmati and Jasmine



- **Medium Grain Rice-** has a shorter, wider kernel (two to three times longer than its width) than long grain rice. Cooked grains are more moist and tender, and have a greater tendency to cling together than long grain.
 - Ex. Sushi Rice
- **Short Grain Rice-** Short grain rice has a short, plump, almost round kernel. Cooked grains are soft and cling together.
 - Ex. Arborio Rice

Nutritional Differences of Rice



- **Brown Rice-** the whole grain form of rice with only the husk removed
- **Parboiled Rice-** steam was passed through the grains with the husks on. The nutrients are embedded into the grain by this procedure. The rice is polished after this steaming is done. This results in more nutritious rice than white rice and more digestible rice than brown rice.
- **Instant Rice-** Precooked and they dehydrated, cooks quickly and the yield is doubled.