

Food Explorations Lab I: Great Grains

STUDENT LAB INVESTIGATIONS

Name: _____

Lab Overview

In this investigation, you will observe the parts of a kernel of corn (a whole grain), identify its structural parts, and test each part for starch.

Lab Objectives

In this lab, you will learn how to...

1. Identify the parts of a whole grain.
2. Determine the part of a whole grain that contains starch.
3. Explain the nutrition in whole grains.
4. Compare and contrast the nutrition of whole grains versus refined grains.

Lab Safety: Before beginning ANY investigation you should put on your safety goggles and apron. It is important to avoid getting chemicals on your hands. Always wash your hands following completion of an investigation. When handling food, you should also wash your hands *prior* to beginning an investigation.

Lab Question

Which part of the grain contains starch? (Circle your answer.)

Bran

Germ

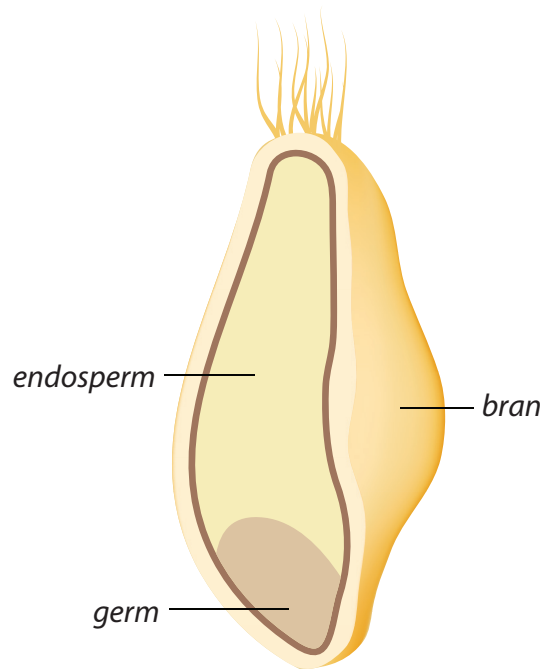
Endosperm

Predictions: I think the _____ contains the starch within a grain because...

Grain Anatomy

MATERIALS

- safety goggles
- aprons (optional)
- 1 corn kernel (pre-soaked in water)
- 1 paper plate
- 1 dissecting needle, scalpel, or push pin
- 1 mL iodine solution in a small cup
- 1 medicine dropper
- 1 black permanent marker
- Hand lens (optional)



PROCEDURE

1. Using the black marker, divide the paper plate into 3 equal sections. Label the sections bran, germ, and endosperm.
2. Place 1 pre-soaked corn kernel on the labeled paper plate.
3. Carefully slice the kernel in half (the long way) using a dissecting needle, scalpel, or push pin.
4. Draw your *visual observations* of the grain in Table A under the column labeled "BEFORE Reacting with Iodine." Label the bran, germ, and endosperm. Use a hand lens for your observations, if available.
5. Describe your *visual observations* of each dissected portion of the corn kernel in Table B under the column labeled "BEFORE Reacting with Iodine."
6. Place 1 drop of iodine solution on each part of the dissected kernel. Draw your *visual observations* of the grain in Table A under the column labeled "AFTER Reacting with Iodine." Label the bran, germ, and endosperm.
7. Describe your *visual observations* of each dissected portion of the corn kernel in Table A under the column labeled "AFTER Reacting with Iodine."

Table A: Visual Observation Drawings of Corn Kernel

BEFORE Reacting with Iodine	AFTER Reacting with Iodine

Table B: Visual Observations of Iodine Reaction

	BEFORE Reacting with Iodine	AFTER Reacting with Iodine
Bran		
Endosperm		
Germ		

Conclusion:

1. Which part of the grain contained starch? Support your answer with evidence from your data.
2. Based on the reading, explain which parts of the grain contain the most nutrition.
3. Based on the reading, compare and contrast whole grains and refined grains.
4. In your own words, explain why it is important to eat whole grains.