

The Great Ingredient Function Experiment

Starring: Chocolate Chip Cookies

Ingredients serve a specific function in baked goods. In this experiment each kitchen will follow the exact same recipe with slight variations (such as all granulated instead of both granulated and brown, or shortening instead of butter which is called for in the original recipe). One kitchen will be the Control group, meaning their results will be the standard cookie that all other cookies will be compared to for this experiment.

Variations for the Great Ingredient Function Experiment:

1. Control
2. All granulated sugar
3. All brown sugar
4. Melted butter
5. Shortening
6. More Flour
7. Egg Replacer

Write your **predictions**:

Cookie Variation	Overall Predictions for the Result Appearance, texture, taste
1. Control	
2. All Granulated Sugar	
3. All Brown Sugar	
4. Melted Butter	
5. Shortening	
6. More Flour	

7. Egg Replacer	
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Idea from <http://www.handletheheat.com/2013/07/the-ultimate-guide-to-chocolate-chip-cookies.html>

All students will be able to evaluate each of the 7 cookies with their specific variations. Be sure to include a detailed evaluation.

Evaluation of the products should be done on an individual basis, using:

(4) = excellent; (3) = good; (2) = OK; (1) = not good

Cookie Variation	Appearance	Texture	Taste	Overall (add Appearance, texture, and taste)	What impact did this ingredient change have on the final product? What changed compared to the control group?
1. Control					
2. All Granulated Sugar					
3. All Brown Sugar					
4. Melted Butter					
5. Shortening					
6. More Flour					
7. Egg Replacer					

1. After completing this experiment, what ingredient do you think has the largest impact on this particular baked good? And why?

2. If we had to do this experiment again, what variation would you like to try that was not listed above?
3. Any other observations that are not included above?

1. CONTROL RECIPE

YIELD: *About 24 cookies*

Ingredients:

1 cup plus 2 tablespoons all-purpose flour
1/2 teaspoon baking soda
1/2 teaspoon salt
½ cup butter, at room temperature
1/4 cup plus 2 tablespoons granulated sugar
1/4 cup plus 2 tablespoons packed brown sugar
1/2 teaspoon vanilla
1 large egg
1 cup semi-sweet chocolate chips

Directions:

Preheat oven to 350°F. Line 2 baking sheets with parchment paper.

In a medium bowl combine the flour, baking soda, and salt and mix with a whisk to prevent any clumps, set aside.

Beat the butter, granulated sugar, and brown sugar until creamy, about 2 minutes. Add the egg and vanilla, beating well to combine, about 1 minute. Gradually beat in about ½ the flour mixture, add in the rest and beat until combined. Stir in the chocolate chips with a spoon. Make 24 equal sized balls and place onto prepared baking sheets.

Bake for 9 to 11 minutes, or until golden brown. Cool for 2 minutes before sliding parchment paper to wire racks to cool completely.

2. All GRANULATED SUGAR RECIPE

YIELD: *About 24 cookies*

Ingredients:

1 cup plus 2 tablespoons all-purpose flour
1/2 teaspoon baking soda
1/2 teaspoon salt
½ cup butter, at room temperature
¾ cup granulated sugar
1/2 teaspoon vanilla
1 large egg
1 cup semi-sweet chocolate chips

Directions:

Preheat oven to 350°F. Line 2 baking sheets with parchment paper.

In a medium bowl combine the flour, baking soda, and salt and mix with a whisk to prevent any clumps, set aside.

Beat the butter and granulated sugar until creamy, about 2 minutes. Add the egg and vanilla, beating well to combine, about 1 minute. Gradually beat in about ½ the flour mixture, add in the rest and beat until combined. Stir in the chocolate chips with a spoon. Make 24 equal sized balls and place onto prepared baking sheets.

Bake for 9 to 11 minutes, or until golden brown. Cool for 2 minutes before sliding parchment paper to wire racks to cool completely.

3. ALL BROWN SUGAR RECIPE

YIELD: *About 24 cookies*

Ingredients:

1 cup plus 2 tablespoons all-purpose flour

1/2 teaspoon baking soda

1/2 teaspoon salt

½ cup butter, at room temperature

¾ cup packed brown sugar

1/2 teaspoon vanilla

1 large egg

1 cup semi-sweet chocolate chips

Directions:

Preheat oven to 350°F. Line 2 baking sheets with parchment paper.

In a medium bowl combine the flour, baking soda, and salt and mix with a whisk to prevent any clumps, set aside.

Beat the butter and brown sugar until creamy, about 2 minutes. Add the egg and vanilla, beating well to combine, about 1 minute. Gradually beat in about ½ the flour mixture, add in the rest and beat until combined. Stir in the chocolate chips with a spoon. Make 24 equal sized balls and place onto prepared baking sheets.

Bake for 9 to 11 minutes, or until golden brown. Cool for 2 minutes before sliding parchment paper to wire racks to cool completely.

4. MELTED BUTTER RECIPE

YIELD: *About 24 cookies*

Ingredients:

1 cup plus 2 tablespoons all-purpose flour

1/2 teaspoon baking soda

1/2 teaspoon salt

½ cup butter, melted

1/4 cup plus 2 tablespoons granulated sugar

1/4 cup plus 2 tablespoons packed brown sugar

1/2 teaspoon vanilla

1 large egg

1 cup semi-sweet chocolate chips

Directions:

Melt butter in microwave until just melted. Place in fridge to cool off a little but not let become solid.

Preheat oven to 350°F. Line 2 baking sheets with parchment paper.

In a medium bowl combine the flour, baking soda, and salt and mix with a whisk to prevent any clumps, set aside.

Stir the melted butter and granulated sugar and brown sugar by hand and let sit for 5 minutes for the sugars to fully absorb the butter. Add the egg and vanilla, beat well to combine, about 1 minute. Gradually beat in about ½ the flour mixture, add in the rest and beat until combined. Stir in the chocolate chips with a spoon. Make 24 equal sized balls and place onto prepared baking sheets.

Bake for 9 to 11 minutes, or until golden brown. Cool for 2 minutes before sliding parchment paper to wire racks to cool completely.

5. SHORTENING RECIPE

YIELD: *About 24 cookies*

Ingredients:

1 cup plus 2 tablespoons all-purpose flour

1/2 teaspoon baking soda

1/2 teaspoon salt

½ c shortening

1/4 cup plus 2 tablespoons granulated sugar

1/4 cup plus 2 tablespoons packed brown sugar

1/2 teaspoon vanilla

1 large egg

1 cup semi-sweet chocolate chips

Directions:

Preheat oven to 350°F. Line 2 baking sheets with parchment paper.

In a medium bowl combine the flour, baking soda, and salt and mix with a whisk to prevent any clumps, set aside.

Beat the **shortening**, granulated sugar, and brown sugar until creamy, about 2 minutes. Add the egg and vanilla, beating well to combine, about 1 minute. Gradually beat in about ½ the flour mixture, add in the rest and beat until combined. Stir in the chocolate chips with a spoon. Make 24 equal sized balls and place onto prepared baking sheets.

Bake for 9 to 11 minutes, or until golden brown. Cool for 2 minutes before sliding parchment paper to wire racks to cool completely.

6. MORE FLOUR RECIPE

YIELD: *About 24 cookies*

Ingredients:

2 cups all-purpose flour
1/2 teaspoon baking soda
1/2 teaspoon salt
½ cup butter, at room temperature
1/4 cup plus 2 tablespoons granulated sugar
1/4 cup plus 2 tablespoons packed brown sugar
1/2 teaspoon vanilla
1 large egg
1 cup semi-sweet chocolate chips

Directions:

Preheat oven to 350°F. Line 2 baking sheets with parchment paper.

In a medium bowl combine the **flour**, baking soda, and salt and mix with a whisk to prevent any clumps, set aside.

Beat the butter, granulated sugar, and brown sugar until creamy, about 2 minutes. Add the egg and vanilla, beating well to combine, about 1 minute. Gradually beat in about ½ the flour mixture, add in the rest and beat until combined. Stir in the chocolate chips with a spoon. Make 24 equal sized balls and place onto prepared baking sheets.

Bake for 9 to 11 minutes, or until golden brown. Cool for 2 minutes before sliding parchment paper to wire racks to cool completely.

7. USING EGG REPLACER

YIELD: *About 24 cookies*

Ingredients:

1 cup plus 2 tablespoons all-purpose flour

1/2 teaspoon baking soda

1/2 teaspoon salt

½ cup butter, at room temperature

1/4 cup plus 2 tablespoons granulated sugar

1/4 cup plus 2 tablespoons packed brown sugar

1/2 teaspoon vanilla

egg replacer (your choice) to equal 1 large egg

1 cup semi-sweet chocolate chips

Directions:

Preheat oven to 350°F. Line 2 baking sheets with parchment paper.

In a medium bowl combine the flour, baking soda, and salt and mix with a whisk to prevent any clumps, set aside.

Beat the butter, granulated sugar, and brown sugar until creamy, about 2 minutes. Add the egg and vanilla, beating well to combine, about 1 minute. Gradually beat in about ½ the flour mixture, add in the rest and beat until combined. Stir in the chocolate chips with a spoon. Make 24 equal sized balls and place onto prepared baking sheets.

Bake for 9 to 11 minutes, or until golden brown. Cool for 2 minutes before sliding parchment paper to wire racks to cool completely.