



## The Invisible World of Yeast---Our Ancient Partner in Bread Making

Student worksheet compiled by: Denise Landrum-Geyer<sup>a</sup>, Lisa Appeddu<sup>b</sup>, Lori Gwyn<sup>c</sup>, and Regina McGrane<sup>d</sup>

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**Student name or names (if done as a group):** \_\_\_\_\_

### Background Information: Yeast's Importance in the World

- 1) What factors distinguish living from nonliving matter?
- 2) What are yeast?
- 3) How are yeast important to society?
- 4) What is fermentation?
- 5) How do humans take advantage of yeast fermentation?
- 6) Knowing this, how could you determine if a microscopic organism or sample is living?



**Pre-Lab Questions**

- 1) What is a hypothesis?
  
  
  
  
  
  
  
  
  
  
- 2) Write a hypothesis statement related to the question “Are yeast living?”:

**Experimental Procedure**

- 1) Obtain three bottles and label as “sugar”; “yeast”; or “sugar & yeast.”
- 2) Add warm water to each bottle. Bottles should be about 2/3 full .
- 3) Add half of a packet of sugar (~1 teaspoon) to each of the bottles labeled “sugar” and “sugar & yeast” .
- 4) Add a large pinch of yeast (~½ teaspoon) to each of the bottles labeled “yeast” and “sugar & yeast” .
- 5) Gently mix the bottles to suspend the sugar and yeast.
- 6) Cover the lid of each bottle with a balloon.
- 7) Incubate for 30 minutes.

**Results**

Describe, sketch, measure the balloon circumference and/or take a photo of the appearance of the bottles and balloons immediately after mixing the contents:

| <u>“Sugar”</u> | <u>“Yeast”</u> | <u>“Sugar &amp; Yeast”</u> |
|----------------|----------------|----------------------------|
|                |                |                            |



Describe, sketch, and/or take a photo of the appearance of the bottles and balloons after 30 minutes of incubation:

| <u>"Sugar"</u> | <u>"Yeast"</u> | <u>"Sugar &amp; Yeast"</u> |
|----------------|----------------|----------------------------|
|                |                |                            |

**Discussion:**

- 1) Did the changes in the bottles and balloons support your hypothesis prediction? Why or why not?
- 2) What is the purpose of the "sugar" and "yeast" bottles?
- 3) How does the appearance of the bottles and balloons relate to bread making?
- 4) What else could you test to further understand yeast fermentation?