



Science Learning Packet

Grade 7:

Populations & Resources, Lesson 4

science learning activities for SPS students during the COVID-19 school closure.

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Due to the COVID-19 closure, teachers were asked to provide packets of home activities. This is not intended to take the place of regular classroom instruction but will help supplement student learning and provide opportunities for student learning while they are absent from school. Assignments are not required or graded. Because of the unprecedented nature of this health crisis and the District's swift closure, some home activities may not be accessible.

If you have difficulty accessing the material or have any questions, please contact your student's teacher.

Lesson 4

Key Concepts So Far!

- Within a population, organisms are always being born and dying.
- A system can be stable even as things are being added to and removed from it. If the amounts being added and being removed are not equal, then the system will change.
- If the number of births and deaths in a given time are equal, then the population size will be stable.
- If there are more births than deaths in a given time, then the size of the population will increase. If there are fewer births than deaths, then the size of the population will decrease.

What ideas do you have about what could cause the number of births to increase in a population?

You will set up an experiment (or observe the results of one) using sugar, an energy storage molecule, to learn more about how energy storage molecules allow organisms to release energy in order to reproduce.

There are many types of energy storage molecules! They contain similar types of atoms but are arranged differently.

We will study the effect of sugar on yeast. We are using yeast because it is a living organism that reproduces quickly, and it is easy to find. **The yeast we are using is the same yeast that you can use to make bread.**

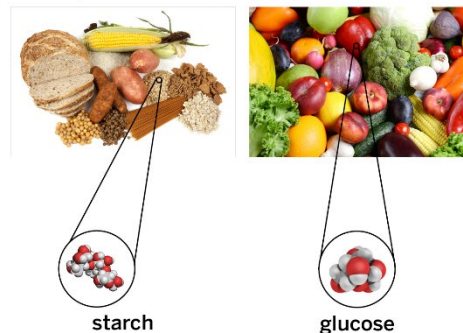
We will test the effect of giving the yeast a lot of sugar, a little sugar, or no sugar.

The goal is to find out **if these differences in the amount of energy storage molecules** affect how much the **yeast can then reproduce.**

Setting Up the Yeast Experiment: If you have the supplies at home, you can do this lab! If not watch the lesson 4 video to see the investigation!

Energy Storage Molecules

carbohydrates
examples include sugars (like glucose) and starch

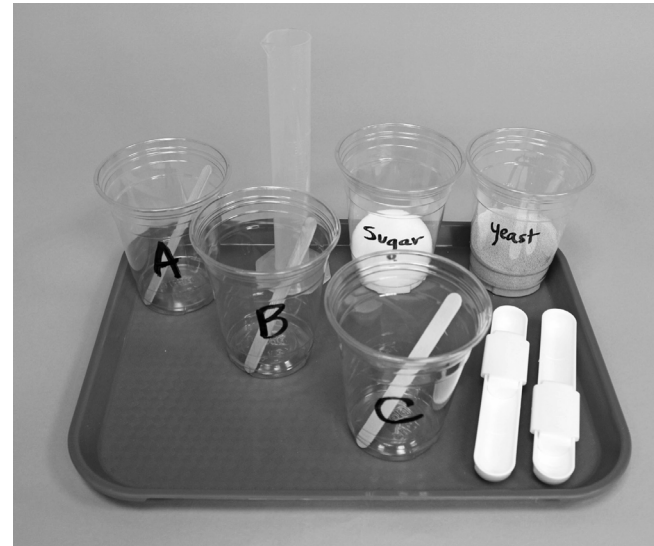


fats



Instructions

1. Place the following amounts of sugar in the cups:
 - Cup A: none
 - Cup B: 1 pinch
 - Cup C: 1 teaspoon
2. Place 1 tablespoon of yeast into each cup.
3. Add about 40 mL (3tbsp) of **warm** water to each cup.
4. Use a wooden stir stick or a spoon to combine the mixture until it is completely wet.
5. Set aside the experiment on a tray or plate to observe later.



This is actually just a physical model of reproduction. The yeast will not actually reproduce during this time, but they will “grow” because they are producing bubbles. The bubbles are carbon dioxide. This carbon dioxide comes from a process the yeast does when it is using and releasing energy from sugar (an energy storage molecule).

Prediction: I think that the container that will “reproduce” more will be _____

While you wait for the results, log into Amplify and access the Populations and Resources digital model and use the middle ecosystem: 3 populations showing ESM

Click on individual organisms and record observations about what you notice when they are reproducing:

| Greenleaf Observations | Weebug Observations | Furbil Populations |
|------------------------|---------------------|--------------------|
| | | |

Yeast Investigation Analysis Questions:

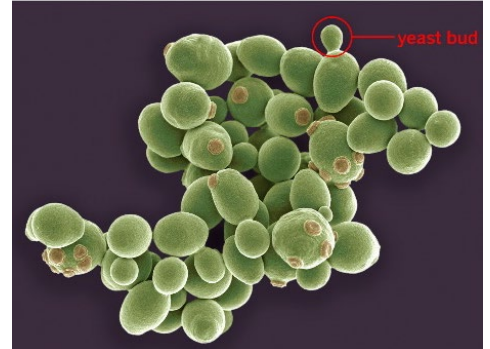
Which cup of yeast showed evidence of reproducing the most? Why do you think that is? Explain your answer.

Predict what you think would happen to the yeast population over time with no additional sugar added:

Since we cannot see the yeast with our naked eye, we cannot get direct evidence that they are reproducing. However, we can look at microscopic images of yeast. This image shows how yeast reproduce. These are yeast cells. Yeast cells produce buds.

The bud gets bigger and bigger until it breaks away and becomes an individual cell.

Yeast Reproduction



Watch the video lesson 4 and answer the following questions about the Cricket Investigation:

What is different about group A and B? What was the **manipulated variable** in their test?

Which group produced more eggs over time (**responding variable**)? Why do you think this is?
