



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Rachel L. Phillips	Project Number S1319
Project Title Let's Blow Up Balloons with Culture: A study of Saccharomyces cerevisiae under Different Environmental Conditions	
Objectives/Goals The purpose of this experiment was to examine yeast colonies under different storage and environmental conditions to see when they produce the most live and active cultures. It was thought that the control would exhibit the most activity. Next would be the orange juice mixture followed by the mixture with salt. After those would be the frozen yeast mixture and the mixture subjected to UV rays was thought to produce the least amount of cultures.	
Abstract Methods/Materials When yeast and sugar are combined they go through the process of alcoholic fermentation. One of the products of alcoholic fermentation is CO(2), now, because CO(2) is invisible, the balloons are placed on the outlet of the bottles to catch the CO(2) and are therefore blown up according to the amount of CO(2) that is produced. The amount of active cultures present is relative to the amount CO(2) present which also is relative to the circumference of the balloon. Because of this process the following method will show how many cultures are produced. Three sugar cubes were dissolved into a cup of warm liquid, which was water in most cases. It was then funneled into a one-liter bottle. A one-quarter ounce packet of baker's yeast was added to the mixture and shaken around. The bottles were then capped with a 9-inch round party balloon. Every fifteen minutes the circumferences of the balloons were measured with a cloth measuring tape.	
Results The results of this experiment suggest that sugar is the main factor involved in production of healthy yeast cultures. The orange juice produced the most cultures (average ending circumference: 48.7 cm), followed by the UV rays (40.7 cm). Next were the control (38.1 cm) and freezer mixtures (37.8 cm) and the culture that produced the least amount of cultures was the salt mixture 28.1 cm).	
Conclusions/Discussion It seems as if sugar is a great way to stimulate yeast culture growth. Storing yeast in the freezer is good for the yeast too, so that the cultures do not activate before it is necessary. UV ray exposure is a stimulant as well, but a UV lamp is not a common tool lying around. Salt is definitely not a good thing for the production of active cultures. Therefore, one should store their yeast in the freezer, and whenever possible, use sugar in conjunction with Saccharomyces cerevisiae.	
Summary Statement This experiment is about seeing under what environmental and storage conditions yeast colonies produce the most live and active cultures using balloons and other common household items.	
Help Received none	