



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

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| <b>Name(s)</b><br>Sean E. Browne  | <b>Project Number</b><br><b>J0402</b> |
| <b>Project Title</b><br><b>Fungus Among Us: How Yeast-Powered Balloons Reveal Secrets of Fermentation</b>   |                                       |
| <b>Abstract</b><br><b>Objectives/Goals</b><br>The objective is to learn more about fermentation by observing how yeast, a common fungus used in the fermentation process, reacts with different liquids.<br><b>Methods/Materials</b><br>When fermentation occurs, carbon dioxide is released. The experiment was designed to measure the amount of carbon dioxide released by eight different liquids that were mixed with active dry yeast and put into bottles. Balloons were attached to the tops of the bottles. As carbon dioxide was released from each mixture, the balloons expanded and the circumference was measured.<br><b>Results</b><br>Apple juice released the most carbon dioxide in 80% of the experiments. On average, substances containing sugar or fructose also released higher levels of carbon dioxide<br><b>Conclusions/Discussion</b><br>My hypothesis was that previously fermented substances would release more carbon dioxide when combined with yeast. However, the results suggest that sugar plays a much more important role in the process of fermentation. The experiment demonstrates that yeast alone does not result in fermentation, but must react with sugar in order to begin the fermentation process. |                                       |
| <b>Summary Statement</b><br>To determine how yeast reacts with various substances by measuring the release of carbon dioxide.   |                                       |
| <b>Help Received</b><br>Science teacher advised on process and timelines. Mother took me to buy materials for experiments. .<br>Father helped me glue my materials to the board.  |                                       |