



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Kelcey J. Price	Project Number J0924
Project Title The Effect of an Enriched CO(2) Atmosphere on Oxygen Production	
Abstract Objectives/Goals What are the effects of an enriched carbon dioxide atmosphere on oxygen production from bromeliad plants, or put simply, can we sustain life on Mars? The hypothesis that was tested in this investigation was that in an enclosed atmosphere, high levels of carbon dioxide would produce increased levels of oxygen from a single bromeliad plant. Methods/Materials Eight bromeliads were each tested 7 times for a total of 56 tests. Four of the 8 plants were tested for three 24 hour periods in a normal air atmosphere and four 24 hour time periods in an increased carbon dioxide atmosphere. The other 4 plants were tested in four 24 hour periods in a normal air atmosphere and three 24 hour periods in an increased carbon dioxide atmosphere. I used Vernier sensors hooked up to the computer to measure the oxygen output from the plants, the amount of carbon dioxide in the enclosed atmosphere, and the amount of light hitting the plant. Statistical analysis were then run. Results The results of this experiment showed that there was not a significant amount of change in the oxygen output between the two test groups to prove the hypothesis. Although the hypothesis was not supported, being that the increased amount of carbon dioxide in an atmosphere would increase the amount of oxygen production, the experimental manipulation, blowing exhaled air into the enclosed atmosphere, thus producing more carbon dioxide in the enclosed atmosphere, was supported. Conclusions/Discussion Life on Mars cannot be supported with this type of plant individually. It does not produce enough oxygen to sustain life on the red planet. I originally thought that more tests would support my hypothesis, so I increased the tests from 8(school fair) to 32(county fair) to the final 56(state fair). The initial results didn't change. Some possible changes that could be made to my experiment to better support my hypothesis include using more than one plant in the test bottle at one time, keeping the carbon dioxide level high throughout the whole 24 hour test period, or using a different type of plant.	
Summary Statement What are the effects of an enriched carbon dioxide atmosphere on oxygen production from bromeliad plants, or simply, can we sustain life on Mars?	
Help Received Mrs. Sniffen let me use her classroom for running tests and provided guidance throughout; Dad ran statistical analysis and explained what they meant; Mom helped edit report; PTA purchased sensors and computer program.	