



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Logan J. Creighton</b>	<b>Project Number</b> <b>S1605</b>
<b>Project Title</b> <b>Will Hyperbarics Effectively Increase the Development of the Red Kidney Bean?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this project is to determine if pressure alone can induce plants to grow with greater efficiency. I believe that in an environment with a higher pressure, the plants, being surrounded with a larger amount of carbon dioxide than is usually present, will grow more effectively.</p> <p><b>Methods/Materials</b> A hyperbaric chamber was constructed out of an 84 inch long cylinder tank with a diameter of 45½ inches. This tank was equipped with all the necessities to sustain plant life including water, heat, and light. Kidney beans were sprouted and planted in pots which were placed into the tank. Growth was recorded through the use of measuring sticks which were placed in the pots along with the plants. Plants grew for ten days, after which the final heights, color, amount and size of leaves, and stem thickness of the plants were recorded. New seeds were selected and the tests were repeated only this time the tank was pressurized to 15 pounds per square inch (double the normal atmospheric pressure). The recordings were made the same way and for the same time duration.</p> <p><b>Results</b> My data shows plants benefit from increased pressure. I have recorded evidence proving plants grown in an environment with an air pressure double that which is normal, have a much darker color indicating an increase in chlorophyll as well as superior health. The pressurized plants frequently had thicker stems, smaller leaves, less leaves, and shorter height due to the higher pressure. I also discovered if a seed is allowed to germinate in a controlled pressurized environment its chances of survival are far greater. Out of a total of 189 seeds grown in normal pressure 29 rotted while out of the same number of pressurized plants I lost only one.</p> <p><b>Conclusions/Discussion</b> Based on my results, I can conclude that my hypothesis was correct. Placing a red kidney bean plant under hyperbaric conditions will improve its development in the area of health which could be considered the most vital of all. It is my belief had I continued my observations for a greater length of time I would have seen that the pressurized plants had a longer life span compared to those grown under normal conditions. (Research still being conducted.)</p>	
<b>Summary Statement</b> This project demonstrates that plants will grow more efficiently in an environment with double the normal atmospheric pressure.	
<b>Help Received</b> Thank you to my father for purchasing the materials and to my mother and sister for proofreading my work.	