



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Yunhao Zhang	Project Number S2023
Project Title Striving for Surviving	
Abstract Objectives/Goals My first goal was to see if Aloe vera can survive in acid and base. Secondly, if they can survive, I will investigate the reasons why and determine if Aloe vera might be used for environmental protection. Methods/Materials In phase one, I divided six healthy Aloe vera into three groups and labeled them as acid, base, and neutral. Since the independent variable was the pH of the soil, I watered the acidic group with lemon juice (pH of 2), the alkaline group with soap water (pH of 12), and the neutral group with water (pH of 7). I watered each group with their respective liquid for one month. The control variables were the air supply and the amount of direct sunshine received. In phase two, I took two new Aloe vera leaves into two groups: acid and base. I tested one leaf with a sodiumhydroxide (NaOH) solution (pH of 14) and the other with a hydrochloric (HCl) solution (pH of 1), both having concentrations of 1%, to see if Aloe can neutralize the solutions. I dropped ten drops of the NaOH solution into the new base group, and ten drops of HCl solution into the new acid group. My results were based on the color change of pH test paper. Results Aloe vera could survive in acid and base; however, compared with the Aloe vera in neutral conditions, Aloe vera in acid and base did get a little damaged. In phase two, the pH test paper for the acid group turned from red to very close to yellow. The pH test paper for the base group changed from dark blue to light blue. Conclusions/Discussion Aloe vera can survive in acid and base because its juice and pulp can neutralize both acid and base. In future investigations, I want to see if polluted gas from cars can be neutralized by Aloe vera.	
Summary Statement I water Aloe vera with acid and base to see if they can survive so that I can determine if Aloe vera can be used for neutralizing acidic or alkaline pollution.	
Help Received Mrs.Tarr provided me necessary equipments for chemistry experiments. My cousin helped me embellish my display board.	