



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Sumail S. Bhogal	Project Number J0401
Project Title The Effects of pH upon Living Tissues	
Objectives/Goals Problem: To determine the resistance of homogenates to pH fluctuations at various temperatures. Hypothesis: My hypothesis is that the most resistant buffer will probably be the liver homogenate at cold temperature.	
Abstract Methods/Materials Materials Needed: 1.Beef Liver Tub; 2.Two Potatoes; 3.Paring Knives; 4.Weighing Balance; 5.Commercial Electrical Blender; 6.Deionized Water; 7.Two 200 mL Beakers; 8.Two 50 mL Beakers; 9.Eight 10 mL Beakers; 10.Eight Graduated Cylinders; 11.Droppers; 12.0.1M NaOH; 13.0.1M HCL; 14.Digital pH Meter; 15.Water Bed; 16.Styrofoam Ice Bath; 17.Cubed or Granulated Ice; 18.Commercial Buffer Solution, pH 7; 19.Non- Lint Wipes; 20.Bulb Thermometers. Procedure: 1. Actual procedure: a.Took the 200 mL beaker in which the potato homogenate was poured and used the graduated cylinder to measure out exactly 10 mL of homogenate. b.Poured out a beakerful of 0.1M NaOH and 0.1M HCL. c.Using a dropper, poured drop by drop of NaOH and HCL into the solution and used the pH meter to measure the pH of each drop added. Recorded results for each and every drop. d.After the tenth drop, put 5 drops instead of one and recorded results three times. e.After recording results with HCL, calibrated the meter by washing it in water, dipping it in buffer solution pH 7 and then resetting the pH to standard 7. f.Resumed the procedure with NaOH and then redid the entire procedure with liver after re-calibrating. g.Again did the procedure, just with different variables such as having the solution in water at the freezing point and also water at body temperature. h.Later on, compared all of the results and came to the conclusion that the most effective buffer was liver in cold water.	
Results As I had hypothesized, the most effective buffer that kept the pH from fluctuating greatly was the liver homogenate at the freezing point. I have come to the analysis that the colder the temperature is, the less the fluctuation there is in the pH. Then second most effective was the liver at the room temperature. After that were the potato at the freezing point and then the potato at room temperature.	
Conclusions/Discussion From the beginning, my hypothesis was that the liver in the freezing point would be the most effective and my results have proved my hypothesis correct, the most effective buffer is liver homogenate at the freezing point.	
Summary Statement In my project I attempted to determine which animal or plant homogenate was the most effective in various temperatures to pH changes.	
Help Received Used lab equipment under supervision of Dr. Allan Tannabi at Cal State University of Bakersfield.	