



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Kayley A. Bryan	Project Number 34355
Project Title Digestion Rate of Starch Solution in Amylase Solution at Various Temperatures and Concentrations	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals THE GOAL OF THIS PROJECT IS TO INVESTIGATE AT WHICH TEMPERATURE AND CONCENTRATION WOULD AMYLASE ENZYME SOLUTION HAVE THE GREATEST DIGESTION RATE ON STARCH SOLUTION.</p> <p>Methods/Materials AMYLASE ENZYME SOLUTIONS (1%, 5% & 10%); STARCH SOLUTION (2%); WATER BATHS (ICE COLD, BODY TEMPERATURE, FEVER TEMPERATURE, BOILING WATER); BUFFER SOLUTION; TEST TUBES & RACK; IODINE INDICATOR SOLUTION; HEATING ELEMENT; 10-HOLE SPOT PLATES; DIGITAL TIMER; THERMOMETER</p> <p>Results THE RESULTS OF THE EXPERIMENT DID NOT SUPPORT MY HYPOTHESES. THE RESULTS INDICATED THAT BODY TEMPERATURE HAS THE GREATEST DIGESTION RATE WITH THE ICE COLD BATH TEMPERATURE HAS THE SECOND GREATEST DIGESTION RATE. THE RESULTS ALSO INDICATED THAT AMYLASE ENZYME AT 10% CONCENTRATION AND BODY TEMPERATURE HAS THE GREATEST DIGESTION RATE WITH THE ICE BATH AT THE SAME CONCENTRATION HAS THE SECOND GREATEST DIGESTION RATE.</p> <p>Conclusions/Discussion MY HYPOTHESES WERE NOT SUPPORTED BY THE TEST RESULTS. RESEARCH INDICATED THAT ADDING HEAT TO SOME ENZYMES MAKES THEM MORE EFFECTIVE HOWEVER WITH AMYLASE THE RESULTS INDICATED THAT AMYLASE IS MOST EFFECTIVE AT BODY TEMPERATURE AND ADDING HEAT MAKES THE ENZYME LESS EFFECTIVE. THE RESULTS ALSO SUGGEST THAT REDUCING THE TEMPERATURE DOES NOT MAKE THE ENZYME LESS EFFECTIVE.</p>	
Summary Statement HOW THE TEMPERATURE AND CONCENTRATION OF AN ENZYME CAN CHANGE THE EFFECTIVENESS OF THE ENZYME ON THE SUBSTRATE.	
Help Received MOTHER AND GRANDFATHER HELPED WITH TIMING, PICTURES AND CREATING GRAPHS.	