



# CALIFORNIA STATE SCIENCE FAIR 2014 PROJECT SUMMARY

<b>Name(s)</b> Alexandra Aerni; Jessica Jaeckel	<b>Project Number</b> <b>S2201</b>
<b>Project Title</b> <b>The Effect of Different Temperatures on the Cellular Respiration of Crickets</b>	
<b>Abstract</b>	
<b>Objectives/Goals</b> This research aims to discover if a cricket's cellular respiration rate is effected by varying temperatures in its environment and how this knowledge can be applied to other cold-blooded creatures.	
<b>Methods/Materials</b> To discover if temperature had an effect on the cellular respiration of crickets, three water baths were set up at the following temperatures: 40 degrees C, 21.8 degrees C (room temperature), and 10 degrees C. Three crickets were placed in each of the baths so an average could be determined. One test tube filled with beads was also put into each of the baths as the control. The amount of oxygen consumed was what was measured. Before the crickets and beads were placed into test tubes, KOH was put onto a cotton ball to absorb the CO <sub>2</sub> produced as a byproduct of aerobic cellular respiration. We waited 5 minutes until equilibrium to place red dye on the end of the pipette, fully submerge the test tubes in the baths, and start the timer.	
<b>Results</b> The crickets at 40°C were consuming more oxygen than the crickets at room temperature (21.8°C) and the cold temperature (10°C). The readings for the warm crickets show a faster decrease, and drop to lower numbers than the room temperature crickets and cold crickets. For example, take the second cricket from each temperature. The warm water cricket at 2 minutes had a reading of .88mL, and by the 14 minute mark had a reading of .415mL on the pipette. The room temperature cricket had a reading of .88mL at 2 minutes, and ended with a reading of .84mL. The cold temperature cricket had a reading of .83mL at 2 minutes and ended with a reading of .80mL at 14 minutes. As you can see, the warm water crickets consume much more oxygen than the room temperature and cold temperature crickets.	
<b>Conclusions/Discussion</b> The result of the crickets' change in respiration was due to the fact that crickets are cold blooded creatures, meaning that they take on whatever temperature their environment is around them. The temperature altered the crickets' cellular activity and thus, effected their cellular rates of respiration. From the results one can conclude that crickets have a higher cellular respiration rate in warmer temperatures and a lower cellular respiration rate in cold temperatures.	
<b>Summary Statement</b> Our project is about the aerobic cellular respiration of crickets and how its effected when the crickets are placed in different temperatures.	
<b>Help Received</b> My science teacher, Ms. Morris, helped us gather the materials needed for the experiment and supervised us while we conducted it in her classroom.	