



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Erin R. Mallon</b>	<b>Project Number</b> <b>J1422</b>
<b>Project Title</b> <b>Caffeinated Daphnia: A Project Testing the Effects of Different Concentrations of Caffeine on a Daphnia's Heartrate</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective was to test the effect of caffeine on a Daphnia's heartrate, and to test how the type of lighting used to gather data affected the overall heartrate.</p> <p><b>Methods/Materials</b> First, 18 Daphnia were cultured. 9 were tested 6 times each for their heartrate in beats/minute over the microscope lamp, 3 times before being given caffeine, and 3 times after being given caffeine. This was repeated with 9 more Daphnia over the LED light.</p> <p><b>Results</b> The median of the Daphnias' heartrates increased by 40 BPM from the initial to the caffeinated test when data was taken with the microscope lamp. The median of the Daphnias' heartrates increased by 39 BPM from the initial to the caffeinated test when data was taken with the LED light. The median of the Daphnias' heartrates in the microscope lamp test was 22 BPM higher overall than the median of the overall heartrates in the LED test.</p> <p><b>Conclusions/Discussion</b> My conclusion is that, according to my data, both caffeine and the microscope lamp increased the Daphnias' heartrates. I had some trouble counting the Daphnias' heartrates, and since this may have affected my data, I am currently retesting the effects of caffeine on a Daphnia's heartrate using a new method, and a modification to the original problem: I will test how different concentrations of caffeine affect a Daphnia's heartrate by hooking up a camera to the microscope and recording the Daphnia's heart beating before and after being given caffeine. Then I can play it back slower and count the heartbeats with much more accuracy. Using this method will eliminate any discrepancies in the data that might have occurred because of miscounting the Daphnias' heartrates, and will enable me to accurately test the effects of different concentrations of caffeine on a Daphnia's heartrate.</p>	
<b>Summary Statement</b> My project is testing the effects of caffeine on a Daphnia's heartrate, and how the type of lighting used to gather data affects the overall heartrate.	
<b>Help Received</b> Science teachers edited writing, ordered original Daphnia culture, and provided some materials used in experiment; Used school's digital video camera.	