



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Caroline E. Lamoureux	Project Number 29177
Project Title Caffeine's Effect on Daphnia's Heart Rate	
Abstract Objectives/Goals The objective of the experiment is to determine whether caffeine (in the form of Monster energy drink) affects a daphnia's heart rate. Methods/Materials Five solutions were formed by mixing 0 ml, 59.15 ml, 118.29 ml, 177.44 ml, and 236.59 ml of Monster energy drink in a liter of spring water. Ten daphnia were placed in each solution and after five minutes their heart rates were observed under a microscope. Monster energy drink was used in the experiment as caffeine because it contains high amounts of caffeine (16 mg of caffeine per 160 ml of Monster energy drink). Results The results showed that when the scientist increased the amount of caffeine in the solution, the daphnia heart rates increased. In pure spring water (0 ml of Monster energy drink; the control group) the average daphnia heart rate was 117 beats per minute. When 59.15 ml, 118.29 ml, and 177.44 ml of Monster energy drink were added to a liter of spring water the average daphnia heart rate (beats per minute) increased to 122, 134, and 177, respectively. When 236.59 ml of Monster energy drink was added to a liter of spring water, the resulting solution killed the daphnia. Their deaths may have been the result of too much caffeine or another chemical contained in Monster energy drink. Conclusions/Discussion The scientist proved that caffeine does affect a daphnia's heart rate. As more caffeine was added to the solution, the daphnia's heart rate increased. Caffeine has been used for hundreds of years in drinks, foods, and medicines. Caffeine is a known stimulant that elevates heart rates, which the experiment's results fully support. Since caffeine affects heart rates, people should carefully consider the affect of consuming large amounts of caffeine.	
Summary Statement My project tests how a daphnia's heart rate is affected by different levels of caffeine.	
Help Received Father helped collect materials; Used microscope from NorthCreek Academy	