



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Daniella Khersonsky	Project Number J2312
Project Title Tipsy Daphnia	
Abstract Objectives/Goals The purpose of this experiment is to examine the long and short-term effects of alcohol on a Daphnia's heartbeat. Methods/Materials <ol style="list-style-type: none">1. Hook up a sergeant welch model 411tbl double lens microscope to a document camera with a microscope attachment.2. Place a drop of Ethanol into a deep well depression slide.3. Then place about .75ml of Daphnia and their culture into the same deep well depression slide.4. Once you focus on a Daphnia start counting the amount of times the heartbeats.5. To count the amount of times the heartbeats use a stopwatch and a counter. Make sure to start the stopwatch and the counter simultaneously.6. Once you lose focus of the Daphnia stop the stopwatch and the counter. On a sheet of paper record the time on the stopwatch and the number on the counter.7. Using the following mathematical equation, the number of times the heart beats divided by the time, times sixty, to get the number of times the heartbeats per minute.8. Average all of the beats per minute together to get the total beats per minute Results The short-term effect of alcohol on a Daphnia's heartbeat is a 4.9% increase of BPM from that of the heart rate of a Daphnia that has not been exposed to alcohol. The long-term effects of alcohol on a Daphnia's heart rate are: a 32.5% increase of BPM over 110 minutes from the heart rate of a Daphnia not exposed to alcohol; an increase in the heart rate, which is followed by a decrease, which is lead by another increase during which the heart rate reaches its highest peak, then plateaus for approximately 10 minutes. After which the heart rate declines to zero BPM, recorded at 110 min after introduction of alcohol into the Daphnia's system. Conclusions/Discussion In this experiment the hypothesis was proven to be correct. When ethanol is added to a Daphnia's system it causes the heart rate (bpm) to increase, then decrease, then increase again, reaching the highest peak, which is then followed by a plateau for approximately ten minutes. After which the heart rate declines to zero, most likely due to the fact that the heart cannot withstand the pressure caused by such an erratic and rapid heart rate. The erratic behavior of the Daphnia's heart beat when exposed to alcohol for a long a period of time is similar to the way a human heart reacts during a heart attack.	
Summary Statement The affects of ethanol and a Daphnia's heart rate	
Help Received NO	