



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Sarah E. Rice	Project Number S1408
Project Title The Physical Effects of Constant Exposure to Noise on Mus musculus	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my experiment was to investigate the physical effects of exposure to constant auditory stressors on <i>Mus musculus</i> (mice) by observing changes in weight, food consumption and physical behavior over a 21 day period.</p> <p>Methods/Materials Create four constant environments to house four groups of mice. Tag and separate 20 mice into four groups. Two groups of 5 female and 5 male mice will be used for the control groups and bare only the ambient noise. The other two environments of 5 female and 5 male mice will be used for the test groups and be exposed to 6 hours of 30 to 75 decibels (dB) of noise for 21 days using the metronome. On the first day, each mouse is weighed to establish a baseline. Every other day, each mouse is weighed and the amount of food consumed by each group is documented. Each group's behaviors are observed and recorded every other day as well.</p> <p>Results The female control group had an average 30.5% weight gain (19.0 grams to 24.8 grams) and the male control group had an average weight loss of 1.2% (28.6 grams to 28.3 grams) over the study period. The results for the experimental groups were a 32.5% weight gain (24.0 grams to 31.8 grams) for the females and an 18.4% weight gain (29.4 grams to 34.8 grams) for the males.</p> <p>Conclusions/Discussion After comparing the weight changes between the four groups, my hypothesis was inconclusive. The experimental groups did not lose weight as expected, but both did have an increase in weight which is in fact an indicator of stress. Also, the tested male mice did become aggressive as a result of the constant exposure to noise. In conclusion, noise is a potential factor of stress in everyday life.</p>	
Summary Statement My experiment was conducted to determine if constant exposure to noise over an extended period of time would physically stress mice.	
Help Received Dr. Zea Borok, Chief of the Division of Pulmonary and Critical Care Medicine at the University of Southern California, who conducts research involving mouse models of human disease, provided guidance and signoff on the certification form and Ms. Fusco for the use of the decibel reader.	