



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Hunter W. Link	Project Number S1411
Project Title Of Mice and Magnets: The Effect of Prolonged Magnetic Exposure on the Weight and Behavior	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this project was to determine if magnetic fields had any effect on the weight or behavior of mice. The hypothesis was that if mice were exposed to a constant level of high-power magnetism over an extended period, then they would lose weight.</p> <p>Methods/Materials Experimentation began on 12/22/04, and consisted of 3 groups of 2 mice each: Groups A, B, & C. Each subject was a 6-12 month old female white mouse. Each lived in a separate cage. Subjects were allowed a control period without magnets to get used to their new habitat. On Jan 4, Groups A & B were exposed to magnetic fields. Group A (Mice 5 & 6) was exposed to higher levels of magnetism (4 high-power magnets under the cage and 4 high-power electromagnets (EMs) on each corner). Group B (Mice 3 & 4) was exposed to low-level magnetism (75 small magnets under the cage and 4 weak EMs on each corner). Group C (Mice 1 & 2) had no magnetic exposure, but dummy EMs were set up just like Groups A & B's. Each subject was weighed each morning at 6:30 AM. The environment was as controlled as possible for each cage (Same feeding and cleaning schedule, etc.). The mice were exposed to the magnets for three weeks. A final experiment was done, involving #6. All the magnets from Cage 5 were placed around Cage 6. Magnets from Group B were removed. Weight was recorded in the same way as before. This experiment was conducted for a week.</p> <p>Results (Note: All weight deltas are the deltas of the average weight of the mice before the magnets were introduced and after they were introduced.) In the three-week experimental period, #1 gained just under 1g, while control #2 lost nearly 1.6g. Both #3 and #4 gained 2g and 3.6g, respectively. #5 lost .2g, and #6 gained .9g. In the second experiment, #6 lost 2.8g in the first day after the magnets were introduced, but gained it back within a day. #6's final delta between the beginning of that week and the end of that week was exactly -1g.</p> <p>Conclusions/Discussion The data are inconclusive and did not support the hypothesis. Although a slight weight loss occurred in #5 in the 1st experiment, #6 gained much more weight. While the 2nd experiment seems to support the hypothesis, there is not enough data to make a definite conclusion. However, the 1st experiment clearly shows that magnets of this strength do not decrease the weight of mice or have any effect on weight at all.</p>	
Summary Statement The purpose of this experiment was to determine if magnetic and electromagnetic fields have an effect on the weight or behavior of mice.	
Help Received I received help from three sources: My father who helped me with the construction of the electromagnets, my mother who drove me to store to buy supplies and took pictures of me while I worked, and Capt. Patrick Grimm who helped me take care of the mice.	