



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Hunter W. Link</b>	<b>Project Number</b> <b>S1411</b>
<b>Project Title</b> <b>Of Mice and Magnets: The Effect of Prolonged Magnetic Exposure on the Weight and Behavior</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> 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><b>Methods/Materials</b> Experimentation began on 12/22/04, and consisted of 3 groups of 2 mice each: Groups A, B, &amp; 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 &amp; B were exposed to magnetic fields. Group A (Mice 5 &amp; 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 &amp; 4) was exposed to low-level magnetism (75 small magnets under the cage and 4 weak EMs on each corner). Group C (Mice 1 &amp; 2) had no magnetic exposure, but dummy EMs were set up just like Groups A &amp; 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><b>Results</b> (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><b>Conclusions/Discussion</b> 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>	
<b>Summary Statement</b> The purpose of this experiment was to determine if magnetic and electromagnetic fields have an effect on the weight or behavior of mice.	
<b>Help Received</b> 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.	