



**CALIFORNIA STATE SCIENCE FAIR  
2007 PROJECT SUMMARY**

<b>Name(s)</b> Alexa E. Lopez	<b>Project Number</b> <b>J1517</b>
<b>Project Title</b> <b>What Is the Effect of Radiation and Heat on the Germination of Seeds?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My project was to determine how electromagnetic radiation and heat adversely or positively affect the germination of tough coated seeds and weak coated seeds.</p> <p><b>Methods/Materials</b> Materials List: Soft coat seeds, hard coat seeds, oven, cookie sheet, microwave, napkins, permanent marker, zip-lock baggies, water and a dropper, 23 clothes pins, 5 clothes hangers, and a sunny window.</p> <p><b>Results</b> The results of the experiment is out of 36 radish seeds and 36 sunflower seeds, only 3 of the microwaved sunflower seeds germinated compared to 13 of the microwaved radish seeds that germinated.</p> <p>Dissimilar results happened for the control group of microwaved seeds. Only 1 radish sprouted compared to 5 sunflower seeds that sprouted.</p> <p>The radish seeds that were baked, did not sprout. The only sunflower seeds that sprouted were the ones that were baked for 1 minute.</p> <p><b>Conclusions/Discussion</b> In conclusion, my hypothesis was not correct. I thought that most of the seeds with the tough coats, which are the sunflower seeds, would grow whether or not they were exposed to the electromagnetic radiation and the heat. And I thought that the radish seeds would not grow because the heat and electromagnetic waves would be too harsh. This showed that heat was worse for the seeds than electromagnetic radiation (microwave oven). After my experiment, I found that the seeds that germinated were:</p> <ul style="list-style-type: none"><li>a) the control group of radish seeds</li><li>b) the radish seeds that were microwaved for 30 and 60 seconds</li><li>c) the control group of sunflower seeds</li><li>d) the sunflower seeds that were baked for 1 minute.</li></ul>	
<b>Summary Statement</b> Electromagnetic Radiation and Heat Affects the Germination of Hard Coated and Soft Coated Seeds	
<b>Help Received</b> My mother helped me type the report and format the data tables.	