



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Steven P. Ledbetter	Project Number J1915
Project Title Plant Waves	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To discover if plants can use wavelengths of light other than visible light to undergo photosynthesis.</p> <p>Methods/Materials Method: Fill eight biodegradable planting squares with cactus potting soil and place two fertilizer pellets and one Brassica Rapa seed in each square. Place four squares in an enclosed space with a light bulb stand and a 60 watt light bulb and place the other four near a source of natural light. At 7:40 a.m. turn on light bulb, at 5:00 p.m. give plants 25ml of filtered tap water and record plants height, at 5:40 turn off light bulb. After 7 days, dispose of plants and go through steps 1-3, use 15 watt ultraviolet light bulb instead of 60 watt bulb, follow step 6. After 7 days, repeat step 7 with a 50 watt infrared light bulb. Materials: Brita water filter; 16 6 1/2 cm by 6 1/2 cm biodegradable potting squares; Brassica Rapa seeds; Brassica Rapa fertilizer; measuring cup; 15 ml measuring spoon; 60 watt light bulb; 15 watt ultraviolet light bulb; 50 watt infrared light bulb; cactus potting soil; light bulb base; customary/ metric ruler</p> <p>Results Brassica Rapa plants are capable of sprouting and growing under different wavelengths of light. The plants grew best under sunlight, second best under the visible light bulb, third best under the infrared light bulb, and worst under the ultraviolet light bulb.</p> <p>Conclusions/Discussion My hypothesis was completely correct. The plants grew better under infrared light than ultraviolet because the sun has a larger percentage of infrared light in its output, so infrared light is more like total sunlight. Plants evolved to grow in total sunlight, so they would grow best under what is most like total sunlight.</p>	
Summary Statement To discover if plants can use wavelengths of light other than visible light to undergo photosynthesis and discover what wavelength plants grow best in.	
Help Received A science fair mentor showed me the website where I got the Brassica Rapa seeds and fertilizer, and my parents provided the money to buy supplies	