



**CALIFORNIA STATE SCIENCE FAIR  
2007 PROJECT SUMMARY**

<b>Name(s)</b> <b>Michelle Chang; Apiradee Sanglimsuwan</b>	<b>Project Number</b> <b>S1408</b>
<b>Project Title</b> <b>Inhibition of Bacterial Growth by Light Wavelengths and Antibiotic Exposure</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this experiment is to test different conditions to impair or promote the growth of bacteria. Plates of bacteria were tested with different wavelengths. Bacteria was also grown alongside another bacteria, one which produced antibiotics. The effects of the interaction of the bacteria were observed.</p> <p><b>Methods/Materials</b> In the first part, common soil bacteria was isolated and colonies were plated. Each plate was placed in a box with red, yellow, or blue wavelength with one plate in a dark box serving as the control. The bacteria was allowed to grow overnight and a colony count was taken.</p> <p>In the second part, bacillus subtilis was plated with other bacterial species including bacillus megaterium, bacillus cereus, bacillus thuringiensis, enterobacter cloacae, and enterobacter aerogenes. They were let to grow overnight and a colony count was taken. The effects of growth was also noted.</p> <p><b>Results</b> The results varied from day to day. The number of colonies grown under red, yellow, blue, or dark light differed each time the bacteria was plated.</p> <p>As for the latter part, bacillus subtilis plated with other bacteria sometimes did not inhibit the overall growth. However, many times fungi grew.</p> <p><b>Conclusions/Discussion</b> Though the results were seemingly random, a slight pattern can be made out in the data regarding bacterial growth. For the colonies under a red wavelength, the colony growth had a spurt in every other generation, generating prominent red peaks in the graph of the colony counts. The bacteria grown under light of a blue wavelength dominated in those generations the red did not and seemed to grow better overall. The yellow wavelength light had no consistent effect on the bacterial growth. But the light was not found to inhibit bacterial growth in anyway, even though the bacteria were isolated from soil not usually exposed to much light.</p> <p>The results of the growth of bacteria in the presence of bacillus subtilis are inconclusive as they vary from day to day with inconsistent outcomes. Because fungus grows many times in random plates, it is difficult to judge whether or not a pattern is present and if B. subtilis is inhibiting growth.</p>	
<b>Summary Statement</b> The purpose of this project is to test different light wavelengths and indirectly expose antibiotics through bacillus subtilis to inhibit growth of bacteria.	
<b>Help Received</b> Teacher helped purchase materials (bacterial cultures, plates, etc.)	