



California Science Center  
**CALIFORNIA STATE SCIENCE FAIR**  
**2001 PROJECT SUMMARY**

<b>Your Name</b> (List all student names if multiple authors.) <b>Natasha L Harrell</b>	<b>Science Fair Use Only</b>  <b>S1209</b>
<b>Project Title</b> (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) <b>Ultraviolet Light vs. Living Organisms</b>	<b>Division</b> _ Junior (6-8) <u>X</u> Senior (9-12)
<b>Preferred Category</b> (See page 5 for descriptions.) <b>12 - Microbiology</b>	
<b>Abstract</b> (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.	
<p><b>Objective:</b> The objective is to determine the affects of ultraviolet light on the bacteria <i>Serratia marcescens</i>.</p> <p><b>Materials and Methods:</b> Nutrient agar mixed with water and heated was placed into 4 Erlenmeyer flasks. 25 petri dishes were then sterilized and the agar mixture added. Inoculated the bacteria <i>Serratia marcescens</i> into dishes at different times. The first 14 dishes were under radiation with the agar on the top of the dish between times of 1 to 15 min. The next two dishes were placed under radiation with the agar on the bottom of the dish at times 15 and 20 min. And the last eight dishes were placed under radiation without lids between times of 1 to 20 min. The first 4 dishes were incubated for 3 days before radiation and the last 20 dishes were placed under radiation immediately after inoculation.</p> <p><b>Results:</b> No visual affects on any dishes immediately after radiation. The first 14 dishes continued to grow rapidly after radiation as they did before, showing no affects from the UV light. The next 2 dishes showed some signs of affect from the radiation. After 24 hrs the bacteria growth was slowed, but it continued normally for the next two days. The last 10 dishes had no growth throughout the 3 days I recorded my observations, so the bacteria was killed.</p> <p><b>Discussion:</b> There appeared to be little to no affect on the bacteria with some form of protection. With the first 14 dishes the UV light filtered through the glass of the petri dish lid and the agar before it reached the bacteria. This method proved to have no affect on the bacteria. With the next two petri dishes the UV light had to filter through the lid, which only slowed the bacteria growth. And the last 8 dishes had no form of protection so the radiation was direct. This method killed the bacteria. I've used this information to conclude that the UV light from the sun can be harmful without protection. The ozone layer acts as our protection from the harmful radiation of the sun as did the agar and petri dish lid in my experiment. Also in my experiment, the UV light affect on the dishes without lids is the same as the suns affect on us with holes in the ozone layer. Research indicates that the body can't detect UV radiation when exposed to it, and without some sort of protection the skin can burn. Researchers also believe that 70% of skin cancer is caused by overexposure to the sun.</p>	
<b>Summary Statement</b> (In one sentence, state what your project is about.) The affect of Ultraviolet light on the bacteria <i>Serratia marcescens</i> .	
<b>Help Received in Doing Project</b> (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. Used lab equipment at THS under supervision of advisor Mr. McCroskey. Advisor helped research project information.	