



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

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Project Title Overexposed: Ultraviolet Light and Its Effect on Algae	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this project was to discover the relationship between ultraviolet light and the percentage of growth of Chlorella algae. I hypothesized that the more ultraviolet light the algae was exposed to, the lower the growth rate would be and the change would be linear.</p> <p>Methods/Materials Ten petri dishes were filled with a Chlorella algae solution. Slides were prepared before exposure and the number of algae cells were counted under a microscope. Two petri dishes each were exposed to zero, one, five, ten, and fifteen minutes of ultraviolet light from a short wave lamp. Cells were counted and the dishes were exposed for each of the five days following. The entire experiment was repeated. The growth rate in percentages was calculated for each sample.</p> <p>Results The control samples showed almost uninhibited growth to about 450% of the original cell count on the final day. The one minute samples were inhibited but continued to grow to about 300%. Both the five and ten minute samples showed little growth or decrease, averaging about 140% on the final day. The fifteen minute sample decreased considerably in algae cells to about 30%.</p> <p>Conclusions/Discussion The algae that received ultraviolet light exposure had a decreased growth rate. However, the decrease was not linear nor inversely proportional to the amount of UV exposure. There are damage repair mechanisms in algae that can fix damage in DNA caused by exposure to ultraviolet light. I believe that somewhere between the ten and fifteen minute exposure levels, there was a critical amount of exposure where the damage repair mechanisms were so overwhelmed that the growth rate considerably declined.</p>	
Summary Statement I compared growth rates of algae that was exposed to controlled levels of ultraviolet light to algae that was not exposed to any ultraviolet light.	
Help Received Safety gear, light source, and microscope borrowed from Colin Matheson, my science teacher. Mother took some pictures. Sunny LeMoine, my English teacher, helped grammatically edit background research and conclusions.	