



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> Aley Barnum; Emily Wright	<b>Project Number</b> <b>S1102</b>
<b>Project Title</b> Now You See It, Now You Don't: A Study of Chromatic Adaptation	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The time of exposure and the time of adaptation are directly proportional. If the eyes are allowed a longer amount of time to chromatically adapt, then the effects of the adaptation will last longer.</p> <p><b>Methods/Materials</b> Materials: Black box (wood, black spray paint, 24 screws); 2 clear plastic panes; 2 two-toned test photos (cause the adaptation); 2 "spotlight" LED lights; 1 12 volt battery; 1 switch; Wire; 1 timer button; DB-9 connector ; DB-9 to USB Cable; Dell Inspiron Laptop. Method: A box was designed to standardize the test subject's viewpoint, control any variables in timing and to display the required times on a laptop using a program designed for this purpose. Tests were held in a single room with a controlled amount of light. Participating students looked into the box at test photo A for a set exposure time of twenty seconds, and then were shown test photo B. The subject pressed the button when the effects of the chromatic adaptation began to wear off. Subjects were given a ten second break then tested again with set exposure time of thirty seconds. After another ten second break subjects were tested with set exposure time of forty seconds. Times from the beginning of viewing test photo B until the button was pressed were recorded along with gender, age, and any need of glasses.</p> <p><b>Results</b> The recorded times were put into six groups by their correlation type: the way the line looked when the three recorded times were graphed. The groups were made by reasoning that each point is either the lowest (l), median (m), or highest (h) of its set, therefore each line must have a correlation of either l/m/h, l/h/m, m/l/h, m/h/l, h/l/m, or h/m/l. The results of the thirty tests from greatest to least were: h/m/l=13, m/h/l=6, l/h/m=5, m/l/h and l/m/h=3, h/l/m=0. Another result noted was that most test subjects had adaptation times between 5 and 35 seconds. No trends were found to be dependent on age, gender, or need of glasses.</p> <p><b>Conclusions/Discussion</b> The data did not support the hypothesis in that the adaptation times were inversely proportional to the exposure time. The longer the eyes were allowed to chromatically adapt the shorter the adaptation was.</p>	
<b>Summary Statement</b> To test the chromatic adaptability of the human eye using test pictures involving light and color.	
<b>Help Received</b> Father helped build and design test box	