



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

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Project Title Cone Cells and Afterimages	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to determine if all three different types of cone cells (green, blue, and red light-sensitive pigment cells) on the human retina fatigue at the same rate.</p> <p>Methods/Materials Ten test subjects were chosen to participate in the experiment. Three different colored diamonds (green, blue, and red) were prepared out of three different colored papers. The test subjects were then asked to stare, one at a time, at each colored diamond for 10, 20, 30, 40, and 50 seconds. They were then asked to shift their gaze to a white board after each interval of seconds ended. The color, shape, and size of the afterimages seen were then recorded. To measure the fatigue rate of the different cone cells, afterimages were used to indirectly determine the time in which a particular cone cell fatigued. The shortest amount of time that was required to see the correct afterimage was determined to be the fatigue rate for that particular cone cell.</p> <p>Results Throughout the experiment, the results showed that the green cone cells fatigued in the shortest amount of time. The average fatigue time of the green cone cells for the test subjects was 18 seconds. The average fatigue time of the blue cone cells was 24 seconds. The average fatigue time of the red cone cells was 28 seconds.</p> <p>Conclusions/Discussion Our green cone cells are stimulated the most out of the three, most likely because we are exposed to green everyday. From forests and grasslands to vegetation, almost everything in the natural world is green. If everything around us is green, our green cone cells would be stimulated the most. This may be helpful because as our green cone cells fatigue, the remaining blue and red cone cells are more available for stimulation.</p>	
Summary Statement The effect of different colors on afterimages perceived by cone cells.	
Help Received	