



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> Eileen Y. Hsu	<b>Project Number</b> <b>J1310</b>
<b>Project Title</b> <b>Now You See It, Now You Don't: How Eye Color Affects Peripheral Vision</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of my project was to test how eye color affects peripheral vision. Through research on peripheral vision prior to experimentation, I learned that the pupils of brown eyes are substantially larger than the pupils of blue eyes. Because the range of peripheral vision relies on the amount of light the pupil can take in, I decided to test if eye color affects peripheral vision and formed a hypothesis: If the eye color is darker, then it will have a wider range of peripheral vision.  I hope that further studies of my experiment may help optometrists create eyeware and treatments for people of different eye colors.	
<b>Methods/Materials</b> Materials: For experimentation, I used 1 arc perimeter, 1 target, test subjects, a windowless room with a constant light source.  Procedures: First, gather all materials. Have the first test subject place their chin on the right side of the chin rest. Tell him/her to cover his/her right eye, and to stare directly at the white focus point. Slowly move the target around the outside of the left half of the arc perimeter until the subject can see it. Record the angle. Next, with the same eye, slowly move the target around the outside of the right half of the arc perimeter until the subject can see it, and record the angle. Repeat this process with as many test subjects necessary.	
<b>Results</b> After completing experimentation, I learned that dark colored eyes do indeed have a wider range of peripheral vision than light colored eyes. The results showed a substantial difference between the average angle at which a dark eyed person could see the target and the average angle at which a light eyed person could see it. The difference was almost 10 degrees, comparable to the negligible results received when testing peripheral vision between the genders.	
<b>Conclusions/Discussion</b> Though having proved my hypothesis correct, I still had a few issues with experimentation. For example, at one point during testing, the light source fell. Another limitation I encountered: I had originally planned to test as many classes as I could, but after having tested only two, I realized that both consisted of predominantly dark eyed people. Because of this, I had to hand pick light eyed test subjects in order to even out the ratio of light eyed test subjects to dark eyed test subjects.	
<b>Summary Statement</b> My project shows my results of how eye color affects peripheral vision, divided up into lighter eye colors and darker eye colors.	
<b>Help Received</b> Received equipment (arc perimeter) from Dr. Randal Yumori, friends helped record results, support of my parents.	