



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Mark T. Nakata	Project Number S2208
Project Title Use of Attractants in Mosquito Control: A Study of Color Affinity in Anopheles gambia Larvae	
Abstract Objectives/Goals The purpose of my experiment is to determine if the Anopheles gambia mosquito larvae's ocelli have the capability to detect color by measuring its affinity to certain colors. If successful, this behavioral trait can be manipulated so that the larvae can be effectively trapped. Methods/Materials I drew four 7.5cm circles in three trays. I put a black, red, green, and white 1 cm cubes in each circle. I transferred 200 1st instar mosquito larvae into each tray. I recorded the larvae's movements for 30 min. I reran the test with 2nd-3rd and 4th instar larvae. I stopped the film at 1 min. intervals and recorded the number of larvae inside the circles. Next, I ran a two color comparison test using 75 2nd-3rd instar larvae. I compared white/white, white/green, white/red, and green/red. Results During the 4 color comparison tests, the 2nd-3rd instar larvae display an affinity for the colors green and red. The 4th instar larvae show an aversion to green. The results of the two cube comparison tests show that the 2nd-3rd instar larvae are more attracted to the colors green and red than white. But, when the red and green cubes were compared, the larvae prefer green. The graphs of the 2nd-3rd instar results indicate a strong attraction during the first 10 min, followed by a rapid decrease. Conclusions/Discussion The data supports my hypothesis. The 2nd-3rd instar larvae show an ability to detect the colors green and red. The results of the two cube comparison tests confirm that the 2nd-3rd instar larvae are most attracted to the color green. The results show that the Anopheles gambia mosquito larvae's ocelli have the capability to detect color and are strongly attracted to the color green. Mosquito borne illnesses cause over 3 million deaths per year; thus, it is imperative to discover new behaviors that can lead to non-toxic effective mosquito control.	
Summary Statement My project examines whether Anopheles gambia mosquito larvae's ocelli have the capability to detect color by running a series of color affinity tests on larvae in different stages of development.	
Help Received Used lab equipment at UC at Irvine under the supervision of Dr. Joshua Hartsel; Mom helped assemble backboard; Dad paid for everything.	