



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jared Truong</b>	<b>Project Number</b> <b>J1728</b>
<b>Project Title</b> <b>From Mealworm to Darkling Beetle: Does UV-C Radiation Have a Mutagenic Effect?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> To determine whether beetles of mealworms irradiated with UV-C rays will have a higher percentage of mutated beetles than that of non-irradiated mealworms. <b>Methods/Materials</b> Six hundred large-sized healthy mealworms were divided equally into six groups, three controls and three tests. Groups were kept in boxes with mesh lids. Once per day, the food, consisting of bran and oats, was sifted out of each box through the lid and the number of dead was recorded. Each test group was then irradiated using a UV-C sanitizing wand for three minutes. All radiation terminated when the first worm pupated. As beetles hatched, a checklist of major characteristics of Darkling Beetles was used to determine whether the beetle was mutated. <b>Results</b> The aggregate mutation rate for the control groups was 23.077% while for the test groups it was 35.714%. One surprising observation was that the test groups had a higher hatching rate than the control groups. <b>Conclusions/Discussion</b> There was a definitive increase in mutation on the beetles of UV-C irradiated mealworms. Although the 54.761% greater mutation rate for the test groups was less than the 75% predicted rate, the hypothesis was largely correct. The unexpected higher hatching rate in the test groups, however, might be a result of the #sanitized# condition created by UV-C radiation.	
<b>Summary Statement</b> UV-C radiation increases the mutation rate in beetles of irradiated mealworms, but also increases the hatching rate of the pupa.	
<b>Help Received</b> Mother helped purchase materials and set up experiment. Father helped take pictures and put together board. Teacher helped advise the project and edit papers.	