



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Anjali Lobana</b>	<b>Project Number</b> <b>S1299</b>
<b>Project Title</b> <b>Vitamin D Deficiency and Obesity</b>	
<b>Abstract</b> <b>Objectives/Goals</b> In recent studies, scientists have inferred to an inverse correlation between Vitamin D Deficiency and Obesity. The goal of this project is to recreate and reaffirm this hypothesis and understand which factors contribute to the relationship. <b>Methods/Materials</b> In order to test the hypothesis, data was collected from a group of 46 people. The data collected included gender, age, weight, height, Vitamin D level (from blood test), Vitamin D supplement usage, daily milk consumption, and daily sun exposure. Obesity was based on the Body Mass Index(BMI) scale. Subjects were categorized into three groups: normal, overweight, and obese based on BMI. After collecting the data, a point system was created to take into account intervention factors such as Vitamin D supplement intake, milk consumption, and sun exposure to help arrive at a more complete picture of the phenomenon. <b>Results</b> After reviewing the factors of the different groups it was determined that the Vitamin D levels did not vary significantly among the three groups. Though, it was noticed that the mean Vitamin D level in the obese group is lower by 17% than the normal; and the variability in obese group is lower as well. Their mean and standard deviations were: $28.9 \pm 15.2$ for normal, $29.9 \pm 14.3$ for overweight, and $23.9 \pm 5.8$ for obese. Additionally, when the intervention such as Vitamin D supplement, milk consumption, and sun exposure were taken into consideration, it was noticed that although subjects from the obese category had some of the most intervention, they were unable to get their Vitamin D levels as high as those in the normal group. <b>Conclusions/Discussion</b> It was apparent that there was an inverse correlation between Vitamin D levels and BMI. Additionally, there is a direct relationship between Vitamin D levels and number of supplement takers in each group. Moreover, a direct relationship is also seen for the number of minutes spent in the sun per day. There was a weaker direct relationship between cups of milk per day and vitamin D levels, and a non-conclusive relationship between age, gender and their vitamin D levels. It is also concluded that data on more subjects are needed to better understand the factors and their relationships.	
<b>Summary Statement</b> In this study I saw several factors that contribute to a correlation between Obesity and Vitamin D deficiency.	
<b>Help Received</b> My cousin Sukhveer Singh (USC graduate, Biomedical Engineer) helped me come up with the idea of a point system and helped me create the display board.	