



**CALIFORNIA SCIENCE & ENGINEERING FAIR  
2019 PROJECT SUMMARY**

<b>Name(s)</b> <b>Shreya Lakkaraju</b>	<b>Project Number</b> <b>S0514</b>
<b>Project Title</b> <b>Oxygen Saturation in Hemoglobin</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> The objective of my project was to prove/disprove a correlation between the amount of glucose dissolved in the blood stream and the oxygen saturation level.</p> <p><b>Methods</b> I used a commercially available non-invasive blood glucose meter to simultaneously measure the blood glucose level and oxygen saturation level in several human subjects. Then, for each subject, I used Microsoft Excel to calculate the correlation coefficient between the two variables being studied: blood glucose level and oxygen saturation level.</p> <p><b>Results</b> I found that the calculated correlation coefficient value was between -0.55 and -0.65 for the human subjects I collected data from. According to statistical theory, this can be considered to be a moderately strong negative correlation, which proves my hypothesis.</p> <p><b>Conclusions</b> The most important implication of my results is that a low level of blood glucose correlates with a high level of oxygen saturation in the blood stream. Whenever the blood glucose level was high, about an hour after a meal for instance, the oxygen saturation level was found to be low. Since a healthy level of oxygen saturation is necessary for good health, individuals with high blood sugar, such as those with Diabetes, must be diligent about taking medication to control their sugar level so that their oxygen saturation level does not remain low for a long time.</p>	
<b>Summary Statement</b> I found a moderately strong mathematical correlation between low blood sugar level and high oxygen saturation level in human subjects	
<b>Help Received</b> I did not receive any help from people or institutions. I learned the necessary statistical concepts from a text book and the internet.	