



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> Neilabjo Maitra	<b>Project Number</b> <b>S2310</b>
<b>Project Title</b> <b>Vasodilation in Drosophila melanogaster with the Application of Various Compounds</b>	
<b>Abstract</b> <b>Objectives/Goals</b> A prevalent problem globally, heart disease is often caused by the constriction of blood vessels, reversible using vasodilators. One class of these vasodilators, nitrate containing compounds, were tested upon cellular, embryonic, and larval fruit flies in order to test the effectiveness of a novel nitrate ester as a vasodilator. <b>Methods/Materials</b> Wild type and Cha GFP strains of fruit flies had to be maintained in food bottles. Using an assortment of salts and sugars, artificial hemolymph was created, wild-type larvae super-glued to a glass slide, the compound in question dissolved in the artificial hemolymph applied, and the heartbeats counted. GFP eggs were collected in bottles with grape-agar plates, and analyzed under a fluorescent cell imager from Biorad with the same solutions applied. Also, the myocytes are to be isolated from the eggs, and the compounds directly applied to them. <b>Results</b> The application of the nitrate ester to the larval flies statistically significantly lowered the heart rate compared to other compounds tested. The luminosities measured by the imager had no significant statistical difference comparing the eggs which had only hemolymph applied to those with the nitrate ester. <b>Conclusions/Discussion</b> The nitrate ester, along with the isosorbide dinitrate, worked to significantly lower heart rate in the larvae, indicating vasodilation - the relaxation of myocytes allows more hemolymph to circulate with less work from the heart. These decreases are likely not due to toxic effects, seeing that the luminosities measured in the GFP eggs, regardless of compound applied, remains about constant, indicating that other factors, likely vasodilation, causes the decrease.	
<b>Summary Statement</b> The vasodilating effects of a novel nitrate ester were tested upon larval fruit flies and their eggs.	
<b>Help Received</b> Dr. Joy Goto provided me with the lab space and facilities to work on my research, giving me advice with the handling of the flies and helping me with the tissue culture. The nitrate ester was obtained from a collaborating group.	