



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jennifer E. Walker</b>	<b>Project Number</b> <b>S1914</b>
<b>Project Title</b> <b>Housefly Chemoreceptors and Their Response to Various Concentrations of Sugars</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> To determine whether the concentrations of sugar solutions have a correlation to the occurrence of labial projection in houseflies, and whether the fly's reaction to different sugars vary.</p> <p><b>Methods/Materials</b> 10.0%, 1.00%, 0.10%, 0.01%, and 0.001% solutions of glucose, sucrose, and fructose were prepared. 20 house flies were bonded to the wooden end of fresh applicator sticks using rubber cement. 10 lumps of clay were placed down the middle of a plastic tray, and 10 down the middle of a second tray. The applicator sticks bound to the flies' backs were each balanced on a piece of clay. A wet paper towel was then placed on each tray. The applicator sticks were adjusted so that the legs of each fly gently rested upon the paper towel. Random selection of the numbered flies and sugar concentration variables continued until each fly had come into contact with each different solution once, and the reaction was recorded.</p> <p><b>Results</b> The only instances in which there were significant differences in data compared to the water control, were 10% solutions. Out of those, 10% Sucrose displayed the most dramatic difference.</p> <p><b>Conclusions/Discussion</b> . Higher concentrations of sugar, when contacted with the tarsi, did indeed prove to have higher instances of labial projection. In addition, results between the different sugars proved to have a notable difference. Expanding upon that, one can also note that the chemoreceptors were perhaps not as sensitive as previously suspected. Also, the data supports the conclusion that the flies were more sensitive to sucrose than either glucose or fructose. As in all experiments, this one contained limitations. It is possible that the experiment simply needed more repetitions in order to produce accurate results. Additionally, the act of moving the fly to the solution could disrupt it from its activities, and induce unusual responses. Additionally, it is possible that the range of concentrations was not vast enough to capture trends in the results.</p>	
<b>Summary Statement</b> The correlation between sugar type, sugar concentration, and the occurrence of labial projection.	
<b>Help Received</b> Used lab equipment at University of California Riverside under the supervision of Dr. Gregory Walker	