



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>LaRena M. Woods</b>	<b>Project Number</b> <b>S1429</b>
<b>Project Title</b> <b>The Effects of Allylamine in Building Resistance in Drosophila</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The chemical allylamine oxidizes in the <i>Drosophila melanogaster</i> body by an amine oxidase function producing acrolein. Then acrolein, by bindings on its electrophilic sites, can react with the flies' DNA resulting in mutagenicity or react with protein causing a loss of protein function. The goal of this project was to expose generations of <i>D. melanogaster</i> to allylamine to determine if a loss of genetic function will cause the flies to become resistant to allylamine.</p> <p><b>Methods/Materials</b> Many generations of the flies were exposed to different concentrations of allylamine through culture mediums. Then generations taken from the control group and first round concentrations of 1mM and 2mM of allylamine were tested separately in second round allylamine concentrations of 0mM, 2mM and 4mM. After 24 days, the flies were counted and the results between the first round concentrations and second round concentrations were compared.</p> <p><b>Results</b> It was hypothesized that if several generations of the flies were exposed to allylamine in its culture medium, they would develop a loss of amine oxidase function and an increased resistance to the allylamine. The data and statistical analyses indicated that there was a significant relationship between first round concentrations and the survival rate of the flies after being exposed to second round concentrations. Furthermore, the flies that had been previously exposed to first round concentrations of the allylamine survived in greater numbers, with a significantly greater mean, than did those in the control group that were not exposed to allylamine. These data suggest that the flies developed some resistance and loss of amine oxidase function.</p> <p><b>Conclusions/Discussion</b> The overall results of this experiment lead to the conclusion that <i>Drosophila melanogaster</i> did build a resistance to allylamine when many generations were exposed to it in culture medium. They also indicate that this resistance is the result of a loss of amine oxidase function, which is favorable to its survival.</p>	
<b>Summary Statement</b> This project explores the ability of <i>Drosophila melanogaster</i> to adapt to the potentially negative impacts of allylamine by exposing numerous generations of the flies to various concentrations of allylamine and observing their survival rate.	
<b>Help Received</b> Used lab space and some equipment at The Scripps Research Institute under the supervision of graduate student, Warren Lewis.	