



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Isaac I. Su	Project Number S1428
Project Title Free Radicals and Aging	
Objectives/Goals Does hydrogen peroxide, a free radical, cause flies to age faster? Will Vitamin C, an anti-oxidant, delay this aging process?	
Abstract	
Methods/Materials 1. Separate 130 Drosophila wild-type flies into 13 vials with 10 flies each. 2. Prepare 20 mL solutions of hydrogen peroxide in the following concentrations: 0%, 0.5%, 1.0%, 1.5%, 2.0%, 2.5%, 3.0% hydrogen peroxide. 3. Prepare 20 mL solutions of hydrogen peroxide and Vitamin C in the following concentrations: 0.5% with 0.724 g Vitamin C, 1.0% with 1.44 g, 1.5% with 2.17 g, 2.0% with 2.89 g, 2.5% with 3.6 g, 3% with 4.224 g. The amounts of Vitamin C were determined by calculating exactly how many moles of Vitamin C would be required to neutralize all the moles of hydrogen peroxide. 4. Place 10 flies into one of 13 vials containing all these different concentrations. 5. Note # of flies living in each vial every 8 hours. 6. Record results.	
Results The average lifespan of flies exposed to a control environment was 14.3 days. The mean average of lifespan of flies exposed to solely hydrogen peroxide was 8.39 days. The mean average of lifespan of flies exposed to both hydrogen peroxide and Vitamin C was 6.48 days. The range of statistical deviation of each vial ranged from 0.42 to 3.3	
Conclusions/Discussion According to my data, hydrogen peroxide did prove to age flies faster. However, Vitamin C did not delay this aging process but rather seemed to facilitate it. This is probably so because I used a lethally high dose of Vitamin C (the most I used in a vial was 4 grams) that was almost 66 times the RDA (recommended daily allowance) for a human. So obviously, a fly would be much more severely affected by this high concentration. The data itself was rather accurate and showed a relatively logical trend in which higher concentrations of hydrogen peroxide and/or Vitamin C killed flies faster than flies living in vials with lower concentrations. The only case this didn't happen was in the 1.5% hydrogen peroxide and 1.0% hydrogen peroxide. 1.5% seemed to live longer than 1.0%. Flie lifespan also decreased significantly in the 2.5% and 3.0% solutions when compared to the 0.5% to the 2.0% solutions. Some factors I didn't consider when I designed this experiment that could've had an effect on the data were sex of the flies, generation of the flies, and fly food medium.	
Summary Statement In my project I basically exposed flies to differing concentrations of hydrogen peroxide and hydrogen peroxide with Vitamin C. I then observed their lifespans to see if these chemicals had an effect on their lifespans.	
Help Received Dad bought materials. Dad helped transferred flies. Mom helped put together project board. Parents drove me places for research. Mrs. Corbett (chemistry teacher) helped make calculations and figure out other aspects of my project.	