



CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s) Danielle Palone; Jessica Ryan	Project Number 22899
Project Title Harmful Effects of Passive Smoke on Lung Ciliary Function using Euglena Model	
Abstract Objectives/Goals This project will attempt to prove that cigarette smoke is harmful to the cilia lining cells of the lung. The single-celled organism euglena will be the model used to prove the hypothesis. Methods/Materials <ol style="list-style-type: none">1. Euglena single-celled organisms donated by Ventura College2. Microscope3. Measuring scale4. Slides5. Marlboro brand cigarettes6. Fume hood Results In the control run of the test, the euglena were moving at a rapid speed and averaged 5.1 seconds to cross 12mm. After the control run, the euglena was then exposed to the smoke of a Marlboro cigarette for 1 minute, then 2, 4, and finally 6 minutes. As shown in the graphs (see display board), there was a rapid reduction in speed of the euglena. On the last test, the slides actually had to be moved around in order to find moving euglena. The original numbers of euglena had depleted and many were abnormally slow, whereas a number of them were not moving at all. It appeared as if the euglena were experiencing some sort of paralysis. Conclusions/Discussion We have demonstrated the toxicity of passive cigarette smoke on the function of cilia. The euglena in our model are the same as the cilia in our lungs. Therefore, passive cigarette smoke leads to paralysis of the cilia, which soon develops into mucous buildup, and eventually increases the opportunity for infection to occur.	
Summary Statement Passive cigarette smoke leads to paralysis of lung cilia as demonstrated using the euglena model.	
Help Received Euglena supplied/donated by Bill Thieman, Ventura College. Mr. Maxwell supervised experiment in the Ventura High School Chemistry Laboratory.	