



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> <b>Rebecca M. Ruf</b>	<b>Project Number</b>  22061
<b>Project Title</b> <b>Olfactory Function and Cigarette Smoke: Does Exposure to Cigarette Smoke Affect Your Sense of Smell?</b>	
<b>Objectives/Goals</b> Conduct controlled testing to see if inhaling cigarette smoke as a smoker or second-hand smoker effects the olfactory sense. <b>Abstract</b> <b>Methods/Materials</b> Four recognizable smells that were easily diluted into different concentrations were chosen. Vinegar, vanilla and strawberry extract, and coffee were selected. The most dilute solution was assigned a value of 100% with concentrations increased by 100% intervals up to 600% for vinegar, vanilla and strawberry extracts. Concentrations from low to high for coffee were between 100% and 1100% for six samples. The test subjects sniffed each sample working from the lowest toward the highest concentrations until they could detect an odor. The number of the cup, which corresponded to the concentration of the particular scent, was recorded. The participants then continued until they could identify the substance. This was recorded as the point of recognition. When the data collection process was complete, I separated all of the survey sheets into four categories: nonsmoker, past smoker, current smoker and people who do currently or have lived with smokers. These groupings were then sorted into subgroups of men and women. <b>Results</b> Current smokers required higher odor concentrations for first detection and recognition levels than other subject categories. Past smokers and people who live with smokers detected odors at a higher concentration than nonsmokers, but lower than current smokers. Both past smokers and people who live with smokers had similar results. In some cases past smokers could detect odors at lower concentrations. The results were similar for both men and women, with men's sense of smell generally weaker than women's. <b>Conclusions/Discussion</b> The data supports the initial hypothesis that cigarette smoke causes a diminished sense of smell both for detection and recognition of odors. The data also supports the second statement in the hypothesis that the sense of smell can improve if a smoker quits. It was found that women and men experienced a decrease in sense of smell where they have been exposed to cigarette smoke in a live-in environment or due to their own past or current smoking habits. Current smokers did the worst on the smell test. Past smokers had a better sense of smell than current smokers at both the first detection and recognition levels. Subjects that live with or are past smokers scored worse than nonsmokers and better than current smokers.	
<b>Summary Statement</b> Measuring the effects of cigarette smoke on olfactory function.	
<b>Help Received</b> Mr. Scates for encouragement; Mother helped develop test samples and supervised testing; Neighbors volunteered for initial trials; Father helped sort data, edit text and check graphs; Sister arranged for table space at SJSU Student Union; Brother and fellow student provided assistance with volunteer subjects.	