



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Austin Jones; Ian Jones	Project Number 34268
Project Title The Effect of Electronic Cigarette Vapor on Calcium Levels in Mice	
Abstract Objectives/Goals This project investigates the effects electronic cigarette vapor can have on mice's blood calcium levels. Nicotine from conventional cigarettes is known to have adverse effects on bone health in humans, but it is unknown whether electronic cigarettes can have similar effects. Because they contain nicotine and are used by many as an alternative (or in addition) to traditional cigarettes, this project's objective is to discover whether the vapor can cause problems for the mice's calcium levels. Methods/Materials Mice, E-cigarettes, syringes, microcapillary tubes, habitats for mice, plate reader Pumped 15 syringes of vapor into treatment aquarium every day. Left vapor in habitat for 15 minutes. Took blood directly after. Froze blood for storage. Analyzed samples with plate reader. Results We analyzed our results using a one-sided T test in which we compared the control group to the treatment group. The p value including the unmarked black mice was 0.29, while the p value while omitting them was 0.25. Both values are greater than 0.05. Therefore, our results were not statistically significant, even though the treatment group showed a definite upwards trend in blood calcium levels in the mice throughout the week. However, the trend was not great enough to justify the results as statistically significant, as opposed to a chance occurrence. Conclusions/Discussion Our experiment showed that electronic cigarette vapor did not have a statistically significant effect on the mice's blood calcium levels. However, there was an increase in their calcium levels by the end of the week of testing, which was not shown by the control group (whose blood calcium levels fluctuated). Additionally, the mice in the treatment group displayed significant behavioral changes, including response and recognition of the vapor, and a subdued nature during blood sampling as compared to the control group.	
Summary Statement We tested whether electronic cigarette vapor has an effect on the blood calcium levels in mice.	
Help Received Went to Amgen to use the plate reader.	