



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Derick R. Cutinha	Project Number 35731
Project Title Effect of Cigarette Smoke Extract on Reactive Oxygen Species Generation and Muscle Function in Caenorhabditis briggsae	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my project was to find out how the cigarette smoke extract (CSE) affected the <i>C. briggsae</i>.</p> <p>Methods/Materials I did the thrashing assay where I checked how the muscle function of the worm was affected by counting the amount of body bends per minute (how many times they twisted and turned). Next, I looked at the muscle striations of a worm not exposed to CSE vs. a worm exposed to CSE to compare. Finally, I performed the ROS assay to see how much ROS was released.</p> <p>Results I found that cigarette smoke extract caused a dose-dependent deterioration in their locomotory response and was associated with abnormality in their muscular architecture. Moreover, this response was associated with an altered reactive oxygen species (ROS) production.</p> <p>Conclusions/Discussion I conclude that <i>C. briggsae</i> could be used as an inexpensive alternate model to study smoke induced alterations in the physiological response of an animal and studying their muscular architecture could reveal possible ultra-structural defects in their muscle which can be correlated to humans, as cardiac muscles in humans share remarkable homology to <i>C. briggsae</i> body wall muscles. From our results, I saw that the worms definitely moved much slower the stronger the dose of CSE. Their muscle striations were no longer straight and the ROS response was abnormal.</p>	
Summary Statement As smoking causes many health problems, I want to see how it affects the heart and the muscular system.	
Help Received Dr. Chatterjee answered questions I asked, but the project was done independently.	