



# CALIFORNIA STATE SCIENCE FAIR 2008 PROJECT SUMMARY

<b>Name(s)</b> <b>Keheira L. Burnett</b>	<b>Project Number</b> <b>S2004</b>
<b>Project Title</b> <b>Cages or Tanks?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The study seeks to answer the question if aside from the lab mouse, can a zebrafish be used as a model to assess drug toxicity and efficacy. A parallelism of both animals will be made to test the hypothesis. The main purpose is to inform the general public especially the students of how drugs are discovered and/or made and what initial steps are taken to test its effectiveness.</p> <p><b>Methods/Materials</b> A thorough research about the mice and the zebrafish was made-their taxonomy, distribution, description, varieties, care. A general observation of both live organisms were conducted - their behavior when fed; when habitat is disturbed by a light tap or knock; and behavior when light coming from a flashlight is shone on them. The body temperatures of both were taken using a temperature probe connected to a CBL and attached to a graphing calculator for 60 seconds. A cotton bud was used to get saliva samples of each specimen; the corresponding pH was measured using a pH paper. A dissected specimen of each available in a college lab was also examined. The internal organs were inspected. Using a microscope, samples of sensory hair cells, brain and muscle tissues were checked.</p> <p><b>Results</b> Zebrafishes are an economical, efficient complement to the lab mice for drug discovery research. There is no significant difference observed on their behavior to other animals when subjected to certain conditions especially when given food. As a vertebrate, the zebrafish body plan shares many similarities with mammals, e.g. the cardiovascular system consists of a two-chambered heart and a vascular system containing arteries and veins; sensory hair cells and brain cells were also similar. Although, it only takes two electrodes to get an electrocardiogram (ECG) of the zebrafish which is handy for gauging a drugs cardiovascular effects rapidly and precisely, it is proven that zebrafish ECG pattern is very similar to human beings.</p> <p><b>Conclusions/Discussion</b> Based on the research conducted, it was shown that a zebrafish could be used as an alternative to the lab mouse for drug discovery research proving my hypothesis valid.</p>	
<b>Summary Statement</b> This research seeks to investigate the parallelism of the zebrafish (Danio rerio) to the mouse as a good model used to assess drug toxicity and efficacy.	
<b>Help Received</b> Inspected dissected specimens of a mouse and a zebrafish at El Camino Compton Educational Center under the supervision of Dr. Aasi; was able to observe each live organism in a pet store by approval of the owner, Mr. Kim.	