



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Jessamyn M. Skutches	Project Number 33359
Project Title An Animal Cognition Study for Siamese Fighting Fish (<i>Betta splendens</i>) Regarding Spatial Learning in a Compound T Maze	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective is to discover if Siamese Fighting Fish (<i>Betta splendens</i>) have the spatial cognitive ability to learn a multiple T-maze.</p> <p>Methods/Materials A multiple T-maze was made of 3/4 inch plywood that was painted and then coated with fiber glass resin for waterproofing. There were 2 acclimation periods before each trial began. The first period, lasting 15 minutes, was to get the water in the holding tanks and the water in the maze equalized both chemically and temperature-wise. The second acclimation period occurred in the acclimation chamber located at the beginning of the maze; the fish were given two minutes to relax before the trial began. While the fish acclimated the food reward was placed in the appropriate section of the maze in relation to the trial number. The stopwatch started simultaneously as the gate was lifted, releasing the fish into the maze. The trial ended when the fish reached the food and began feeding. Times for each of the five fish were recorded and then averaged for each trial.</p> <p>Results In the first seventeen trials, the fish would sometimes take several minutes to eat, if they ate at all. If the fish did not eat, the trial would be ended at the five-minute mark. Once live tubifex worms were introduced as the food reward the fish always ate. The experiment yielded significant results from this time forward. The last five trials' averages were 29.33 sec., 26.20 sec., 20.68 sec., 19.21 sec., and 17.49 sec.</p> <p>Conclusions/Discussion During research it was discovered that Betta fish have been known to be taught tricks when food rewards were used. After twenty trials using live food, the Betta fishes' times were clearly faster. The forty percent decrease in the average trial time for completing the entire maze indicated that the fish were truly learning the maze. As was stated in the hypothesis, Betta fish can learn a multiple T-maze. However, evidence shows that their memory may only be short term. For example, when a day was skipped between trials, the average time was longer than the previous trial. Future work could investigate short and long term learning.</p>	
Summary Statement To determine if Betta fish have the spatial learning ability to learn a multiple T-maze.	
Help Received My father helped build the maze. My mother and father helped time the trials. My science teacher helped with the experiment design.	