



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Caroline K. Salmond	Project Number S1911
Project Title A Goldfish Never Forgets: Year Two	
Abstract Objectives/Goals The objective of this experiment is to determine if goldfish contain long-term memory capabilities or the ability to remember an event or an occurrence when shown three colors through conditioning methods. Methods/Materials The goldfish were operantly conditioned using three different colored rings. Training with the rings was repeated for seven days. The fish faced three rings, with the red ring containing food, in order to attract the fish. Three final tests were conducted in a large tub (one test did include food in the red ring). Results While being operantly conditioned, the goldfish began to more rapidly recognize the red ring. They would swim to the red ring before food was placed in the tank, but they would completely avoid the blue and yellow rings. The majority of the fish swam to the red ring during their final tests, with their times continually lowering. While some fish did not swim to the red ring during the first two tests, all the fish swam to the red ring during the final test. Conclusions/Discussion The common goldfish has long-term memory capabilities, along with the ability to see and establish different colors (red, blue, and yellow), and possibly the ability to smell an object and follow that scent.	
Summary Statement This experiment is designed to determine if goldfish can be operantly conditioned in order to display long-term memory characteristics.	
Help Received Mother helped maintain fish; Father helped take pictures.	