



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Diego J. Magana	Project Number J1216
Project Title World in a Bottle	
Objectives/Goals Objective: I performed this experiment to show how different proportions of animals would affect the overall health in a closed system.	
Abstract Methods/Materials Materials and Methods: Basically I set up three biospheres with various environments in five trials. I named the environments A, B, and C. In the A trial I put one fish and two plants. The B trial obtained two fish and two plants. The C trial had three fish and two plants. I had to keep and observe for 5 days to find the perfect balance. This experiment was like keeping a small world in maintenance. I had to observe the health of the fish and the water clarity and then I gave it a score according to a scale I developed. The scale was: Survival of Fish (SOF): 1/1 = 1.0, 0/1 = 0, 2/2 = 1.0, 1/2 = 0.5, 0/2 = 0 3/3 = 1.0, 2/3 = 0.7, 1/3 = 0.3, 0/3 = 0 Water Clarity (WC): 0 = mud colored, 1 = coffee colored, 2 = black tea colored, 3 = apple juice colored, 4 = lemonade colored, 5 = clear water Add the SOF and WC points together to give you the overall score of each biosphere (SOF + WC = Overall Health of Biosphere).	
Results Results: I developed an educated hypothesis that states, if I put a goldfish in a jar alone with two plants, then the overall health would prosper. Later, my hypothesis was proven correct. The environment A, which had one fish and two plants resulted in a prosperous biosphere. B resulted as the second best. C was the least in vegetation and growth because the fish were inhaling the oxygen too quickly and the plants couldn't keep up with the cycle.	
Conclusions/Discussion Conclusion: Our earth is like a big jar of life; a biosphere. We all need oxygen and all plants give oxygen by taking in our carbon dioxide that we exhale. It is an efficient cycle, but we cannot survive if the cycle is broken. If living animals were enclosed in a jar alone, they would inhale all the oxygen in the jar and exhale carbon dioxide with no plants to convert the carbon dioxide into oxygen; they would die.	
Summary Statement I constructed miniature worlds in three environments to test how different proportions of plants and animals affect the overall health of a closed system.	
Help Received Mother contributed in gathering the supplies I needed such as the jars and the plants.	