



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jennifer C. Wang</b>	<b>Project Number</b> <b>S0813</b>
---	---------------------------------------

**Project Title**  
**The Effect of a Soluble Calcium Solution on an Aquatic Plant's Ability to Withstand Global Warming**

**Abstract**

**Objectives/Goals**  
Hypothesis: A soluble calcium solution will increase an aquatic plant's ability to survive global warming

**Methods/Materials**

1. 9 healthy ulva plants
2. 3 small (approx. 1.5 gallon) fish tanks
3. an abundance of salt water make-up
4. Reef Success Calcium Solution
5. 3 water heaters with temperature range of at least 45 to 95

Methods:

1. Tanks labeled A, B, C. Tank A (control) maintained at 65 degrees farenheight. Tank B and C (experimental) both kept at 85 degrees farenheight
2. Tanks filled with salt water makeup
3. The water was heated. [Tank A: 65 degrees, Tanks B/C: 85 degrees]
4. 25 drops of calcium solution were added to Tank B, nothing added to tank A/C
5. The experiment was run for 24 hrs
6. Results/observations were recorded. The zones of depletion were counted on each plant, colors and textures were recorded.
7. The experiment was repeated three times. The second trial included 50 drops of calcium in tank B, and the third trail included 60 drops of calcium in tank B. The temperatures were maintained at 65 degrees in tank A, and 85 degrees in tanks B and C.
8. All tanks were washed and filled with new salt water. New healthy plants were used for each trial.

**Results**  
The results of my experiment proved my hypothesis; soluble calcium does increase an aquatic plant's chances of survival during global warming. There was no change in tank A. The ulva in tank B appeared healthier than the ulva in Tank C. The ulva in tank C was also brittle and lighter in color. The ulva in tank C had a large amount of zones of depletion. In trials 2 and 3, the increase of calcium added to tank B decreased the number of zones of depletion of the plant.

**Conclusions/Discussion**  
My results are directly correlative to the amount of calcium that was added to tank B. The ulva in tank A was healthy because were was no environmental stress on the plant. The health of the ulva in tank B was

**Summary Statement**  
My project is about the effect of a soluble calcium solution on an aquatic plant's ability to withstand global warming.

**Help Received**  
Used Aquarium of the Pacific's tanks, sea water, and heaters; used Mr. Starodub's calcium solution (my mentor); used ulva collected by Cabrillo Marine Aquarium.