



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Sabrina L. Houston	Project Number S1999
Project Title Solving Salt Stress: Chemical Genomics with an Agricultural Implication	
Abstract Objectives/Goals Purpose was to find chemicals from the PMRA/PMRP libraries that would cause resistance in the Arabidopsis thaliana seedlings in a salt stressed media. The PMRA 1 library would be the most affective in causing resistance; the PMRA 2 library would be the most affective in causing sensitivity. Methods/Materials A 200mM NaCl media was created, pipetted 199mL of the salt media into a 96 well plate then added 1mL of the chemical from the PMRA/PMRP libraries, a four day old Arabidopsis thaliana seedling was placed, with the cotyledon facing up, into the gel media. Results Five trials were found to extremely resistant to the salt stress. Only one trial from the PMRA 1 library was found to be other under the 10th percentile of the mean color values of green and above the 90th percentile of the area of the cotyledon. This trial was the B7 trial with an area of the cotyledon being 0.008cm ³ and the mean green value being one of the lowest collect, 81.229nm. The PMRA 2 library was able to produce two trials that appeared to have resistive qualities; the G5 trial resulted in an area of cotyledon of 89cm ³ as well as a green mean color value of 113.404nm. The second trial was the H2 chemical well that contained a 92cm ³ cotyledon area and an 113.804nm green mean color value. The PMRP 3 library was able to produce also two different chemical well trials that are resistant. The F5 trial had a 127cm ³ area of cotyledon as well as a 103.74nm green color mean value, and the A3 trial had a 157cm ³ area and a 103.968nm color value. In chemical structure, the structure of the chemicals in the PMRA 1 B7 trial and PMRA 2 G5 trial are incredibly similar suggesting that the structure and elements associated have an effect on the trans-Golgi network. Conclusions/Discussion The experiment could be expanded on by testing the chemicals found to be resistant on tomato seeds to see if all the different plant seeds react. The agricultural industry is a \$43.5 billion dollar industry. California, has access to an immense amount of salt water. It is possible to find a chemical that will allow agrarians to use salt water for farming rather than strictly fresh water.	
Summary Statement To uncover a cure for salt stress on land plants by using the PMRP/PMRP libraries	
Help Received Nolan Ung allowed me to use his resources as well as the resources at UCR to conduct my project	