



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Victoria Marquez	Project Number J2308
Project Title Surchin for Salinity	
Abstract Objectives/Goals The purpose of this experiment was to determine whether more Purple Sea-Urchin eggs fertilized in 31 ppt, 34 ppt, or 37 ppt salinity levels. Higher salinity water forms when ocean water evaporates, leaving behind the salt. Lower salinity water forms when ocean water meets with a river, or another source of fresh water. This was important to test because, as scientists we need to know if animals will be able to reproduce or survive with global warming as an issue Methods/Materials The materials needed to conduct this experiment are 3 small beakers, 145.5 mL of seawater, 4.5 mL of fresh water, 0.2 g of sea salt, 1 microscope, Sea-Urchin eggs, Sea-Urchin sperm, 3 glass pipettes, and 1 refractometer. My independent variables were the different salinity levels used, which were 31 and 37 ppt. A few steps I took to conduct my experiment included, making the different salinity levels of the water, transferring the gametes into the three beakers, waiting 45 minutes for the eggs to fertilize, and lastly examining and counting them under the microscope. Results The data demonstrates that Sea-Urchins had the highest fertilization rate in a 37 ppt salinity level, with an average of 27.3. This result was expected because 37 ppt salinity is the highest salinity level, since we live in California, the sun evaporates a lot of ocean water which leaves behind a higher amount of salt in the water. The 34 ppt salinity came in close second, with an average of 26.8 eggs fertilized. This demonstrates that the Sea-Urchins were also very comfortable in their regular salinity water, where they probably felt the safest. My results also show that the salinity level with the least amount of eggs fertilized was 31 ppt, with an average of 22.8. This big change in salinity level caused the Sea-Urchins to feel threatened, thus the fertilization rate was low. Conclusions/Discussion From my observations and data, I can conclude that the gametes fertilized more in the higher sea water because it is what they were most accustomed to, here in California, or in Los Angeles the hot sun often evaporates the water leaving behind more salt in the water.	
Summary Statement My project tests the fertilization rate of purple sea-urchins in different salinity levels.	
Help Received I made the different salinity levels of the water on my own, but I received help spawning the sea-urchins, I also received materials such as a microscope, and a refractometer.	