



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> Nhung C. Phan	<b>Project Number</b> <b>S1915</b>
<b>Project Title</b> <b>Evidence for a Chemical Sensory Mechanism in Strongylocentrotus purpuratus</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The focus of this experiment is to explore the possible ability of purple sea urchins by manipulating a non-tactile chemical sensory mechanism to detect distant objects, such as rocks. <b>Methods/Materials</b> In each set of trials, urchins were selected through the process of random selection and were placed at one end of the tank opposite to the rocks. Successful trials would involve the urchin's movement in locating the rocks on the other side of the tank. Controlled trials were conducted with urchins who were never given prior exposure time with the rock. The experimental trials consisted of urchins who were given prior introduction to the rock for a time of three hours but then either had the rock scrubbed or underwent further exposure with simulated wave movements. All trials that took place in the tank ran for three hours. A grid underneath the tank measured the distance traveled by the urchins, which was recorded every fifteen minutes. <b>Results</b> Results show that urchins who were exposed to the rock were able to find their way to the rock more often and in a lesser time than urchins that were not given prior exposure. Furthermore, there was a reduction in the level of locomotive activity when the rocks were scrubbed and the simulated wave movements were added. <b>Conclusions/Discussion</b> Results indicate that sea urchins have a chemical sensory mechanism. This indication was supported by urchins' inability to locate a rock after it was scrubbed. The scrubbing process is to rid the rock of any chemicals it may have in aiding the urchin's movement. This is further supported with the set of trials in which the urchins were introduced to simulated wave movements. The simulation reduced urchins' movements toward the rock in diffusing their senses throughout the tank.	
<b>Summary Statement</b> This project employed the use of rocks to test sea urchins' sensory mechanism base on chemical.	
<b>Help Received</b> Sister helped with calculations; project was conducted under the guidance of teachers: Todd Linke and Larry Nordell	