



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Adam J. Protter	Project Number S1797
Project Title Effects of Triclosan on Sperm Motility, Fertilization, and Early Development of Strongylocentrotus purpuratus	
Abstract Objectives/Goals The objective of this project was to determine if Triclosan, a widely used antimicrobial compound found in many household items, has an effect on the fertilization, embryological development, and sperm motility of the purple sea urchin (<i>Strongylocentrotus purpuratus</i>). Methods/Materials Gametes were first diluted to an optimal concentration for fertilization and then exposed to a range of Triclosan concentrations which have been detected in human urine and breast milk. Sperm motility was observed under a microscope, and fertilization was assessed by measuring the percent of successful fertilizations within each concentration as compared to the control (no Triclosan). Embryonic development was assessed visually under a microscope from cleavage to larvae. Results Above 1ppm Triclosan causes sperm immotility and blocks all fertilization. Above 100ppb, Triclosan inhibits the ability of fertilized eggs to develop into viable embryos. Conclusions/Discussion A model for the method of action of Triclosan's ability to cause immotility in sperm is proposed: As sperm possess calcium channels and it is known that triclosan depolarizes L-type calcium channels in mice, this study proposes that Triclosan is disrupting the calcium channels on the sperm, which is in turn causing the flagella to stop. Furthermore, it is hypothesized that Triclosan can act as a molecular probe used to investigate the function and properties of calcium channels.	
Summary Statement This project investigates Triclosan and its effect on the fertilization, sperm motility and embryonic development of the purple sea urchin.	
Help Received	