



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

<b>Name(s)</b> <b>Johan G. Thuen</b>	<b>Project Number</b>  35468
<b>Project Title</b> <b>Lights from the Sea: How Do Light/Dark Cycles Affect Bioluminescence?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of my project is to see how different light/dark cycles affect bioluminescence in dinoflagellates. I believe that as the light cycle nears zero hours per 24 hour cycle the glow will diminish and at zero hours per day of light I believe they will stop glowing. I also predict that if there is no dark time (24 hours of light) they will stop glowing. <b>Methods/Materials</b> Twenty-one test tube samples of the dinoflagellate, <i>Pyrocystis fusiformis</i> , a large unicellular bioluminescent algae, were observed under seven different light/dark cycles. These cycles ranged from zero hours of light during a 24 hour cycle to 24 hours of light during a 24 hour cycle. Observations were recorded four times a day for seven days. The seven day experiment was then repeated two more times. <b>Results</b> The data results showed that 12 to 20 hours of light produced the most consistent brightness during the dark cycle. Eight hours or less of light during a 24 hour cycle began to lose brightness during its dark cycle and zero hours of light could not maintain its brightness. <b>Conclusions/Discussion</b> My conclusion is that bioluminescent dinoflagellates need a minimum amount of light during a 24 hour cycle to maintain their glow and that too much light or dark will diminish their brightness.	
<b>Summary Statement</b> My project demonstrates how different light/dark cycles affect the bioluminescence of dinoflagellates.	
<b>Help Received</b> My Mother helped type my report. She also did the 11 a.m. observations on school days.	