CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
J1521

Project Title
Lights from the Sea: How Do Light/Dark Cycles Affect Bioluminescence?

Abstract

Objectives/Goals
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.

Methods/Materials
Twenty-one test tube samples of the dinoflagellate, Pyrocystis fusiformis, 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.

Results
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.

Conclusions/Discussion
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.

Summary Statement
My project demonstrates how different light/dark cycles affect the bioluminescence of dinoflagellates.

Help Received
My Mother helped type my report. She also did the 11 a.m. observations on school days.