



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Zoe A.M. Davidson	Project Number J1905
Project Title The Butterfly's Secret: How Do Temperature and Light Affect the Time It Takes a Chrysalis to Hatch?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to see how light and temperature made a difference to the amount of time the Painted Lady butterfly was in its chrysalis.</p> <p>Methods/Materials As the Painted lady caterpillars formed into chrysalises I numbered them and put them into 1 of 4 clear plastic boxes. Box A: warm/light temp:71.4 deg F with 12 hours of daylight and 12 hours of darkness. Box B:warm/dark temp.71.4 deg. F. where there was 20hrs of darkness and 4 hours of daylight.Box C: cold/light temp.56.6 deg.F where there was 12 hrs of daylight and 12 hrs of darkness.Box D:cold/dark temp.57.1 deg.F where there was 20 hrs of darkness and 4 hrs of daylight. A digital thermometer was used.</p> <p>Results The first chrysalis hatched in 8 days,it was one in Box B, the warm and dark box where the temp was 71.4 deg F.and there was 12 hours of daylight. The last chrysalis to hatch, hatched in 27 days,it was in Box D where it was cold and dark, where the temperature was 57.1 degrees F. and there was 4hrs of daylight.</p> <p>Conclusions/Discussion What I found out was that the warmer the temperature the less the light makes a difference to the amount of time a butterfly is in its chrysalis. When it is cold the amount light to which the chrysalis is exposed makes a big difference to the hatching time of the chrysalis.I think that when its cold the chrysalises need more light because the light gives off heat like the sun does to the earth, this makes up in part for the low temperatures.</p>	
Summary Statement How do heat and light affect the amount of time it takes a chrysalis to hatch?	
Help Received I discussed my experiment design with my family and my mom helped me in making the graphs.	