



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Connor B. Harden	Project Number J1908
Project Title Cloning Cabbages	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my project was to see which piece of a cabbages stem would grow the best if the stem pieces were placed under the same conditions. My hypothesis states that I believe that the bottom stem piece will grow the best and this is because I know that the bottom part of a cabbages stem recieves nutrients first in a whole cabbage and I believed that this fact would be noticable in my results.</p> <p>Methods/Materials For my project I used three cabbages,a cutting board,knife,nine paper towels,nine sealable plastic bags,water,permanent marker,a large tray,lab notebook,and a camera. Using these materials I conducted my project. First I stripped the leaves off the stem of the cabbages and then cut those stems into three pieces. Then I took those nine stem pieces and put them into labeled resealable plastic bags with a damp paper towel to provide the cabbages with water. Those stem pieces in their corresponding labeled plastic bags were then put into a large tray and photographed and some physical data was recorded on a graph. The tray with plastic bags was placed under a window to provide sunlight for photosynthesis and every day I blew carbon dioxide from my breaths into the bag to again allow the plant to survive. I also recorded important differences in the stem pieces such as when I noticed that one of the bottom stem pieces had started growing leaves</p> <p>Results I found that the bottom stem piece of my cabbage grew the best after all the tests. This result is on average over a test of nine cabbage pieces with three of each type, the types being a top, middle, and a bottom piece. The results were surprising to me especially considering that</p> <p>Conclusions/Discussion After the completion of my project I found that my results had shown that on average the bottom stem piece did grow the best. This data also supported my hypothesis. The information collected from this project has already provided me with knowledge on how many plants reproduce using assexual reproduction.</p>	
Summary Statement This project is about learning which part of a cabbages stem can reproduce through assexual reproduction the best.	
Help Received My parents provided me with my supplies.	