



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> <b>Lauren G. Billnitzer</b>	<b>Project Number</b> <b>J1902</b>
<b>Project Title</b> <b>I Wet My Plants... with Hydrogen Peroxide: The Effects of H<sub>2</sub>O<sub>2</sub> on Seed Germination and Stem Cuttings</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Improved methods of producing healthy crops in environmentally-friendly manners are desirable. The purpose of my experiment was to determine the effects of hydrogen peroxide on seed germination and stem cuttings.</p> <p><b>Methods/Materials</b> I used four different growing solutions of H<sub>2</sub>O<sub>2</sub> in water and a control of water to wet basil seeds and basil stem cuttings growing in a greenhouse environment. I checked daily for seed germination for three weeks. I measured stem cutting growth by root development in the roots to shoot ratio after three weeks of growing. I used 10 basil seeds and 3 stem cuttings for each solution per trial, and I ran three trials.</p> <p><b>Results</b> My results showed that a 6% H<sub>2</sub>O<sub>2</sub> solution yielded beneficial results for both seed germination and stem cuttings, however only by a small percentage, and more testing would be needed to completely confirm these results.</p> <p><b>Conclusions/Discussion</b> These positive results occurred because H<sub>2</sub>O<sub>2</sub> dismutated, or broke into a water compound and an oxygen atom, supplying beneficial amounts of oxygen and water directly to the plants. The single reactive atom of oxygen from the H<sub>2</sub>O<sub>2</sub> dismutation also oxidized harmful bacteria on the plants. A larger concentration of H<sub>2</sub>O<sub>2</sub> was too acidic and provided more pure oxygen to the plants than was healthy, and a smaller concentration provided insufficient H<sub>2</sub>O<sub>2</sub> to help.</p>	
<b>Summary Statement</b> I showed that a 6% solution of H <sub>2</sub> O <sub>2</sub> in water provides beneficial results for seed germination and the growth of stem cuttings.	
<b>Help Received</b>	