



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

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Project Title The Learning Plant	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals In this experiment, we attempted to test the hypothesis that plants can be classically conditioned. We used the Venus flytrap as the plant specimen and its trapping response as the behavior to be conditioned. We used stroking the leaf as the unconditioned stimulus (UCS) and vibration of the plant as the conditioned stimulus.</p> <p>Methods/Materials</p> <ol style="list-style-type: none">1. 3 Venus# Flytraps (Fully grown with leafs)2. Massager as the source of vibration3. Toothpicks4. Stopwatch <p>We conducted 4 separate experiments using different parameters for the conditioning paradigm. The experimental conditions were as follows:</p> <ol style="list-style-type: none">1. Duration of CS for one minute with low frequency vibration2. Duration of CS for one minute with high frequency vibration3. Duration of CS for two minutes with low frequency vibration4. Duration of CS for two minutes with high frequency vibration. <p>Each of the four experiments in this research was conducted in 4 phases:</p> <p>Phase one: baseline assessment of plants' responsiveness to stroking the interior of the leaf with a toothpick. This was to ascertain that the Flytraps were indeed capable of trapping and were healthy.</p> <p>Phase two: Plants were stimulated with a massaging vibrator for a period of one (or two) minutes to assess whether there was any trapping response to vibration stimulus alone.</p> <p>Phase three: Coupling of the unconditional stimulus of stroking the inside of the leaf with the vibration stimulus. This was achieved by stimulating the plants with the vibrator applied to the container pot for a period of one or two minutes at high or low frequency</p> <p>. Midway during vibration, the individual leaves were stroked inside with a toothpick. This procedure was repeated daily for 5 consecutive days.</p> <p>Phase four: after the 5 day conditioning period, the leaves were stimulated by vibration alone.</p> <p>Results Five days following pairing of the CS with the UCS, 0/17 leaves responded to vibration stimulus in experiment 1. In experiments 2, 3 and 4, the response rates were 0/21, 0/22, and 0/22 respectively. There</p>	
Summary Statement Do Venus Flytraps have the ability to be conditioned, and therefore be able to associate a neutral stimulus with and unconditional one?	
Help Received Sister gave technical assistance; Mother helped with board layout design and technical work with the board	