



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

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| <b>Name(s)</b><br>Lena N. Gavenas   | <b>Project Number</b><br><br>31931 |
| <b>Project Title</b><br>Carrots vs. Crown Gall  |                                    |
| <b>Abstract</b><br><b>Objectives/Goals</b><br>Objectives: The experiment was to measure the effects of Beta Carotene (a nutrient commonly found in carrots) on the growth of sunflowers infected with the Crown Gall plant disease. It was expected that since crown gall impairs the plant's ability to take in nutrients, the more nutrients provided, the more of a chance that some will be absorbed.<br><b>Methods/Materials</b><br>Methods: Five groups of four plants each with relatively consistent heights were inoculated with agrobacterium tumefaciens (crown gall). Twice a week for two and a half weeks each group was watered with different amounts of Beta Carotene, from 0 to 8,200 mg. The plants were measured twice a week until the end of the testing period.<br><b>Results</b><br>Results: The group with the highest dosage of Beta Carotene grew the most, while the group with no Beta Carotene grew the least.<br><b>Conclusions/Discussion</b><br>Conclusions: The conclusion is that the more beta carotene an infected plant receives (up until a point undetermined by this experiment), the taller and healthier it becomes. |                                    |
| <b>Summary Statement</b><br>The experiment measures the effect of Beta Carotene on the height of sunflowers infected with Agrobacterium Tumefaciens (Crown Gall).   |                                    |
| <b>Help Received</b><br>Parents helped locate and buy materials as well as proofread work   |                                    |