



# CALIFORNIA STATE SCIENCE FAIR 2006 PROJECT SUMMARY

<b>Name(s)</b> <b>Leanne T. Fretz</b>	<b>Project Number</b> <b>J1312</b>
<b>Project Title</b> <b>Ailing Roses</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this experiment is to see if a garlic extract can prevent Crown Gall in rose plants. This experiment is important to me because if garlic can reduce the symptoms of Crown Gall in rose plants, then scientists can further develop it into medicine for other types of cancers and bacterial diseases for humans. I hypothesized that if garlic oil is mixed with the watering of the roses daily of three of the Crown Gall-diseased rose plants, then the Crown Gall tumor at the base of the garlic treated plants will end up smaller and healthier than the tumors of the regular treated plants.</p> <p><b>Methods/Materials</b> Materials: 1 apple tree already infected with Crown Gall, 7 rose plants, 7 plots for the rose plants to grow in, garlic oil. Procedures: Buy 7 rose plants at nursery, obtain Crown Gall infested apple tree from nursery, have 6 rose plant#s roots grow with the roots of the Crown Gall infected apple tree for 1 week, take apple tree out and observe symptoms of roses, daily water all 7 plants and in addition, water three rose plants with the garlic oil, record each day what each plant is on the health scale on data table, record each day how big each tumor is in each data table, after twenty-one days, graph data on four graphs.</p> <p><b>Results</b> My hypothesis proved true. In group one (infected with garlic), plant#1 got to one on the health scale, plant#2 got to two, and plant#3 got to two. In group two (without garlic treatment), plant#1 got to six on the health scale, plant#2 got to six, and plant#3 got to five. In group one, plant#1#s tumor went away, plant#2#s tumor got to .5 cm, and plant#3#s tumor got to .5 cm. In group two, plant#1#s tumor got to 2.5 cm, plant#2#s tumor got to 2.5 cm, and plant#3#s got to 2 cm. Group one was overall lower on the health scale and had smaller tumors that would eventually go away.</p> <p><b>Conclusions/Discussion</b> The reason garlic diminished the Crown Gall was because it has a cancer-fighting substance named allyl sulfide. It also contains allicin and its antioxidant properties can inactivate cell-destructive free radicals and help the immune system in wiping out premature cancer cells. Garlic is also useful in preventing digestive cancers, and it may act against breast and prostate cancer as well. Crown Gall is also a bacterial disease and one of garlic#s constituents, allicin, blocks key enzymes that assist bacteria and viruses in their attempt to occupy and harm tissues.</p>	
<b>Summary Statement</b> Ailing Roses is about garlic extract healing Crown Gall disease (a bacterial cancer on plants) on rose plants.	
<b>Help Received</b> My mentor Frank Kinnaman advised me about the measurement of garlic oil to use, he also helped me locate the apple tree with the crown gall.	