



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Raman V. Nelakanti	Project Number J1629
Project Title Factors Affecting Nodule Formations in Legumes	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Rhizobium leguminosarum bacteria share an important relationship with legumes. Rhizobium bacteria fix nitrogen for a legume plant and in return, the bacteria get shelter and nutrients in a nodule. The purpose of the experiment was to find what factors are important in the formation of nodules on legumes.</p> <p>Methods/Materials Legumes were planted in a community garden and in the laboratory with potting soil, vermiculite, and vermiculite with inoculated rhizobium. At termination, the roots were searched for nodules. The material used were: 12 pots, 2 bags of vermiculite, a bag of potting soil, 36 snow pea seeds, Bacteria (Rhizobium leguminosarum) from the Carolina Biological Supply Company (Catalog # ER-15-5270, non-pathogenic), nutrient broth, an inoculating loop, and a Bunsen burner.</p> <p>Results There was an average of 12 nodules in community garden plants, 3 for potting soil, and none in both the vermiculite with and without bacteria.</p> <p>Conclusions/Discussion The presence of rhizobium bacteria is a factor affecting nodule formation. The results from my field observation and from the positive control group indicate that the factors affecting the formation of nodules, is not just the presence of the Rhizobium bacteria, but also the time factor, temperature factor, as well as the nutrient factor and others.</p>	
Summary Statement The main point of my project was to find what factors such as time, nutrients, and moisture, affect nodule formation in legumes.	
Help Received Mr. Lee, my advisor, taught me the scientific method and got me the materials needed for the project.	