



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Sarah J. Giffin	Project Number S1310
Project Title Do Bees Know Something that We Don't?	
Abstract Objectives/Goals The goal of this project was to see if honey and royal jelly effected the growth of E.coli, B.subtilis and S.aureus. Methods/Materials On the first day, a preliminary experiment was done where each type of bacteria was grown for 8 hours, then spread onto agar plates where a disc containing each type of dilluted honey was placed. On the second day, the bacteria were spread across more agar plates and pure honey and royal jelly was placed in wells made in agar. On the final day, a growth curve was done on the royal jelly and sugar water to see how much of an effect on the growth of the bacteria they really had. Results From the preliminary experiment I found that the honey had no effect on any of the bacteria, while on the second day the honey had a foggy zone of inhibition around them. The royal jelly had a very clear zone of inhibition so a growth curve was done to see how effectual it was, along with sugar as a control. In the growth curve, the royal jelly essentially stopped the growth of B.subtilis and S.aureus but not as much in E.coli. The sugar was also found to have an effect on the growth of bacteria, too. Conclusions/Discussion I have concluded that the reason why honey has such an effect on the growth of the bacteria is because of its extremely high sugar content (78-84%). Royal jelly has a protein in it called royalisin that affects only the growth of bacteria in Gram-positive bacteria, but my experiment showed that the royal jelly had some effect on the Gram-negative bacteria.	
Summary Statement The effects of honey and royal jelly on the growth of B.subtilis, S.aureus and E.coli.	
Help Received Dr. Srinivas Kothakota supplied me with bacteria strains, and other necessary supplies. Protein Pathways allowed me to use their laboratory. My father helped me with the procedure. Jim and Carolyn Wingate supplied me with the honey and royal jelly.	