



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Christian Castillo; Martha Villarreal	Project Number J1698
Project Title Antibiotic Harvester Ants	
Abstract Objectives/Goals Our project is about the antibiotic properties of a bacterium carried by the Black Desert Harvester Ant (<i>Messor pergandei</i>). In a previous test, we determined that this species of seed harvesting ant carries the bacteria <i>Streptomyces noursei</i> . Native Americans were known to infuse cloth or leather at ant nest sites and bind wounds with the cloth. We believe that antibodies produced by <i>Streptomyces noursei</i> carried by this ant symbiotically to protect its own food sources may have many health benefits for humans. Methods/Materials In this project we conducted a screening test with representative species of fungi and yeasts (<i>Penicillium candidum</i> , <i>Penicillium expansum</i> , <i>Penicillium glaucum</i> , <i>Aspergillus niger</i> , <i>Saccharomyces cerevisiae</i> , <i>Saccharomyces boulardii</i> , <i>Candida galbrata</i> , and <i>Candida albicans</i>) to determine if the bacteria, known to produce the antibiotic nystatin, would be inhibited by the presence of the bacteria. Results We determined that of the eight (8) fungal and yeast species tried, one species <i>Candida albican</i> , a common human pathogen, appeared to be very inhibited at the site of the test discs employed. Conclusions/Discussion This being the case, we also would have expected a related species, <i>Candida galbrata</i> , a human skin pathogen to have also been inhibited. We are encouraged by our preliminary screening and plan on a wider and more extensive experiment with other social insects, such as wasps, that may exhibit similar symbiotic antibiotic protection mechanisms.	
Summary Statement This project examines the antibiotic properties of a bacterium carried by the Black Harvester Ant (<i>Messor pergandei</i>), and that the <i>Streptomyces noursei</i> carried by this ant symbiotically may have health benefits for humans.	
Help Received	