



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Yi Jung Robin Park	Project Number S2209
Project Title Racial Discrimination in Ants: Effects of Cohabitation in Behaviors of Linepithema humile and Prenolepis imparis	
Abstract Objectives/Goals The objective was to test whether ants of two different species could be made to coexist peacefully with members of the other species. Methods/Materials 60 members of each species, <i>L. humile</i> and <i>P. imparis</i> , were collected. 20 <i>L. humile</i> ants and 20 <i>P. imparis</i> ants were placed in separate environments that were recreated to represent each of their natural habitats. 20 members of each species were then intermixed in an environment that was recreated to suit <i>L. humile</i> ants. The remaining 20 of each species were intermixed in an environment that was recreated to suit <i>P. imparis</i> ants. Results Within their own habitats, both ant species were mobile and interactive. In the habitat that favored <i>L. humile</i> ants, the <i>L. humile</i> ants first segregated themselves into a small area of the container and avoided interactions with the widespread <i>P. imparis</i> ants. After a period of three days however, the ants achieved a peaceful coexistence. In the habitat that favored <i>P. imparis</i> ants, the <i>L. humile</i> ants remained scattered and immobile, refusing to touch the nesting substrate. The <i>P. imparis</i> ants killed all of the <i>L. humile</i> ants within 17 hours. Conclusions/Discussion Prolonged exposure to environmental substances causes changes in an ant's Cuticular Hydrocarbon Composition, the main nestmate recognition tool among ants. The uneven distribution of chemical cues is shown in the greater hostility expressed by <i>P. imparis</i> ants in the second environment, in which the <i>L. humile</i> ants refused to touch the nesting material. It can be stipulated that greater dominance is asserted in familiar habitats rather than in foreign ones.	
Summary Statement Peaceful coexistence between two ant species during cohabitation can only be established when they are placed in a habitat that is recreated to suit the less dominant species.	
Help Received Dr. Phil Ward of UC Davis helped confirm the species of ants via email and photos; Mother helped take photos of the ants	