



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Morgan A. Toy	Project Number J1133
Project Title To Clean or Not Too Clean?	
Abstract Objectives/Goals Problem Statement: Which household cleaning object is most susceptible to bacteria, and which noncommercial disinfectant cleans most effectively? Hypothesis: I believe the household dishwashing sponge would retain the most bacteria because of its porous structure. Eventually some food would get caught in its pores and promote bacterial growth. I also think that the best method for cleaning the media would be the bleach solution because it is sometimes an ingredient in commercial disinfectants. Methods/Materials Materials: a. Assorted media- dishtowel, sponge, scouring pad b. Incubator with heating pads and Celsius thermometer c. TSA blood agar plates d. Sterile saline solution e. Bacteria loop f. Disinfecting materials-dishwasher/dishwashing soap, microwave, Clorox bleach, air dry Investigation: 1. Take the three types of media and expose them to identical bacterial conditions 2. Immerse in a sterile saline solution and incubate for 48 hours at 37 degrees Celsius 3. Compare test samples to sterile media samples to find the most contaminated 4. Expose each media to the same disinfecting processes-bleach solution, dishwashing, microwaves, air drying 5. Compare disinfected test samples to the bacteria exposed test samples to find the most effective cleaning method Results The scouring pad was the most susceptible to bacteria growth. For cleaning these media, the bleach solution and the dishwasher were the most effective methods. Microwaves failed to kill bacteria as effectively as the bleach solution or dishwasher despite the samples being subject to microwaves for three whole minutes. Air drying worked the least effectively and actually encouraged bacterial growth Conclusions/Discussion In the household kitchen, the scouring pad harbors the most bacteria and needs to be cleaned most often, and in disinfecting the items, a bleach solution and dishwashing cycle are the most efficient alternatives.	
Summary Statement I am determining which household kitchen cleaning objects retain the most bacteria after exposure to identical bacterial conditions and which noncommercial disinfectants work the most effectively in killing bacteria from the samples.	
Help Received My father helped build the incubator, and my mother supervised my testing. St. Joseph's Medical Center donated media, a bacteria loop, and a Celsius thermometer.	