



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> Chris Ballard; Micky Einstein	<b>Project Number</b>  22654
<b>Project Title</b> Bacteria Reaction to Antibacterial Soap	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The hypothesis is that the bacteria will become resistant to the soap by the second generation. This hypothesis was formed because most germs have been gaining resistance to their attackers.</p> <p><b>Methods/Materials</b></p> <ol style="list-style-type: none"><li>1. Swab hand with a cotton applicator.</li><li>2. Streak five different petri dishes with the applicator.</li><li>3. Incubate bacteria at 37 degrees Celsius.</li><li>4. Use one pipette per petri dish and remove a small amount of bacteria from each. Place it in the tryptic soy broth.</li><li>5. Incubate the broth at 37 degrees Celsius until cloudy (usually completed in twenty-four hours).</li><li>6. Dip cotton applicator in bacteria and streak on five plates.</li><li>7. Make and place the different soap disks on all of the different plates.</li><li>8. Incubate until grown.</li><li>9. Measure the diameter of the circle around soap disk.</li><li>10. Repeat steps four through nine until fourth generation of bacteria has been recorded.</li></ol> <p><b>Results</b> The bacteria did gain resistance over time, therefore, our hypothesis was correct. The soap that displayed the most resistance gain was Dial. The second generation of Dial also had resistant bacteria growing within the circle where no bacteria grows.</p> <p><b>Conclusions/Discussion</b> This experiment shows that bacteria gains resistance to anti-bacterial soap. Therefore, it is best to wash the hands with regular soap for at least 60 seconds. This experiment is valid and repeatable. Next time this experiment is done it should be done while monitored. The amount of soap on the disks has to be measured to make this experiment more valid. This experiment must also be done inside at the same place each time. The anti-bacterial soaps are not as effective in killing the bacteria as expected.</p>	
<b>Summary Statement</b> The main motive is to see if bacteria becomes more resistant over time to anti-bacterial soap and which soap is most effective.	
<b>Help Received</b> Lab Technician in Mom's office. Showed us technique of culturing bacteria.	