



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

<b>Name(s)</b> <b>Phoebe G. Ng</b>	<b>Project Number</b> <b>J1324</b>
<b>Project Title</b> <b>The Life Saver: The Easiest Way to Reduce Your Medical Bill</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of this project is to find out the most effective hand washing method(s) that will remove the most bacteria from our hands. Hence, it will prevent spreading and getting pathogenic bacteria. I strongly believe this project will demonstrate that proper hand washing, disregard the present/absent of soap, can eliminate most bacteria, including pathogenic bacteria.</p> <p><b>Methods/Materials</b> Prepare nutrition agar with chicken broth and pour into sterile Petri dishes. Create a "bacteria bed" by using a lightly damp hand towel to rub lightly over the surface of common items/areas that our hands touch frequently to collect the maximum number of dirt and bacteria. Before the start of each hand washing trial, wash hands thoroughly with soap for 25 second and dry the hands. Wipe hands with the damp "bacteria bed" thoroughly for 15 seconds to ensure each trial starts with the same initial "settings." Eight hand washing methods were tested: not wash, randomly rinse, wash randomly and thoroughly without bar soap, wash randomly and thoroughly with soft soap, and wash randomly and thoroughly with antibacterial soap. After completing the hand washing method, swab fingers gently in a zigzag pattern across the surface of the agar. Place all dishes in room temperature and count the number of colony growth on the surface for the next seven days.</p> <p><b>Results</b> The number of bacteria colonies grow for unwash versus rinse hands are almost the identical (7- days mean average 97 vs. 81). Washing hands with bar soap has more bacteria colonies grown among the three hand washing groups with soaps. Washing hands thoroughly with soap have much less bacteria colony growth than washing hand randomly for the same type of soap (mean average for bar, soft, and antibacterial soaps are 38 vs. 34 vs. 17) . Washing hands with antibacterial soap has the least number of bacteria grown.</p> <p><b>Conclusions/Discussion</b> The result supports the hypothesis that thoroughness is the determining factor on how well hand washing can eliminate bacteria from our hand, disregard the present/absent of soap. Usages of different type of soaps can be marginally assist us to eliminate bacteria to a slightly lower level/number of bacteria. The result also provide evidence that rinse hand is no better than not washing at all.</p>	
<b>Summary Statement</b> The purpose of this project is to find out the most effective hand washing method(s) that will remove most bacteria from our hands.	
<b>Help Received</b> Ms. Nazarro provided numerous technical advice. My parents and siblings provided me with unconditional assistance on the display and as well encouragement.	