



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Linley Barba	Project Number J0503
Project Title Immensity of the Density: Does the Type of Fat Used in Soap-Making Affect the Density of the Finished Product?	
Abstract Objectives/Goals My objective was to learn to make soap using different types of fats; I assumed that the solidity of the type of fat used would determine the density of the finished soap. Methods/Materials I made 2 batches each of soap using 6 types of fat, and identical materials (stove, saucepan, stir sticks, scale, graduated beaker, salt solution, lye solution, water, strainer). After allowing all the soaps to dry for the same amount of time, I did 3 trials on each cake of soap to test for density, using water displacement to calculate the irregular soaps' volume, and a digital scale to find their mass. I calculated density ($D=M \div V$) for each and charted my results. Results The soaps all came out looking, smelling, feeling, and lathering similarly. I had assumed such different seeming fats would yield very different soaps. After all the tests were completed, the Crisco soap proved to be densest by a small margin, and the almond oil soap the least dense. Conclusions/Discussion I concluded that maybe saturation or hydrogenation were also important factors in soap's density, not just the observable solidity of the fat, and that perhaps something about saponification chemically evened out the apparent differences in the lipids used.	
Summary Statement This project aimed to find out if the density of soap is affected by the type of fat used to make it.	
Help Received Grandfather helped calculate density; mother proofread, supervised use of stove in soap-making, shared ideas about display.	