



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title Effect of Salt on Protein Denaturation in Egg Yolks: Measuring the Change of Rolling Time	
Abstract Objectives/Goals The objective was to determine whether the egg protein would coagulate in saline solutions and whether there would be a difference in rolling time as a result of this coagulation. The hypothesis was that the coagulation of eggs and the rolling time will be both affected by the concentration of the salt solution they were in. The hypothesis is based on the process of denaturation by salt. Methods/Materials A brief procedure of the experiment is the following. The eggs, some numbered and some unnumbered, are put into 0%, 5%, 10%, 15%, and 20% salt solutions. Every other day, the numbered eggs are rolled on a slide of length 306.3cm and 15-degree slope, and the rolling time is measured and recorded in seconds. Every four days, one of the unnumbered ones is taken out from each solution, broken, and observed for any changes. Results The results support the hypothesis. As the days passed, the total average of the rolling time, excluding the control group, decreased from 5.33 to 4.59 seconds. From observation, the egg yolks in saline solutions of higher concentration were found to start coagulating around day 10. The slope, or the relative changes of rolling time, measured since day 10, varied according to the concentration such that the solutions with higher salt concentrations had greater slope, i.e., the 20% solution had the slope of 0.03 while the 0% only had 0.0025. Conclusions/Discussion Thus, when the egg was put in saline solution, the rolling time decreased while the observation showed the solution with greater concentration enabled faster coagulation, proving that the salt coagulated the egg.	
Summary Statement This experiment observed egg yolks being coagulated under saline water conditions and measured rolling times to verify the results.	
Help Received Parents helped in purchasing materials and measuring rolling time.	