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Development of a Discovery Laboratory to Observe and Quantify Protein Denaturation and Coagulation in Egg White Albumin

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Poster Presentation P3

**DEVELOPMENT OF A DISCOVERY LABORATORY TO OBSERVE AND QUANTIFY
PROTEIN DENATURATION AND COAGULATION IN EGG WHITE ALBUMIN**

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Protein denaturation and coagulation are complex processes that occur in biological systems. Protein denaturation is the process by which the tertiary structure of a protein is disrupted and the molecule becomes “unfolded,” and protein coagulation is the process by which these denatured proteins bind together in an unorganized way. The goal of this project was to develop an experimental procedure to allow students to observe and quantify the denaturation and coagulation processes in egg white albumin. Egg whites were diluted and then heated to force protein denaturation and coagulation. Differences in the extent to which the egg white protein coagulation occurred were observed and quantified over a time course at four different temperatures. The use of b-mercaptoethanol, a compound that reduces disulfide linkages essential to protein structure, was also introduced into the albumin solution to examine its effects on the amount of denatured and coagulated protein. Gravimetric analysis and SDS-polyacrylamide gel electrophoresis were used for quantitative analysis of the coagulated protein. No significant difference in coagulation was detected over the time course. Significant differences in coagulation were detected at different temperatures and when b-mercaptoethanol was added to samples.