Predicting Eye Color Genotype Based on Phenotype

Kloske, Madelyn

Eye-color genotypes are good predictors of eye-color phenotypes. The purpose of this project was to go the other direction and see if eye-color genotypes could be predicted based on eye-color phenotypes. To do this, DNA samples were gathered from twelve family members; primers were designed to target four of the key genes that control eye color; the DNA was run through PCR, bead purification, and gel electrophoresis; and then the samples were sequenced to analyze the results. The experiment was successful in determining the four genotypes for all twelve family members. The genotype predictions in the hypothesis were pretty good, but two genotypes were incorrectly predicted. Therefore, the hypothesis was incorrect. There are a couple of reasons for the incorrect genotype predictions. It is sometimes hard to identify an exact eye color when looking at eyes. Also, there are many more variants that contribute to eye color than were tested for.

Awards Won: