

Monozygotic twins share identical genotypes and often similar early-life environments, yet many display differences in physical traits, health outcomes, and behavioral characteristics as time and age progress; this demonstrates that environmental factors have an effect. This is a case study that is looking at a pair of monozygotic twins with an identical genome and evaluating how different environments affect their phenotypes. The goal of this case study was to investigate what effects environmental differences have on phenotypic differences in a set of identical twins. We will test the null hypothesis (H_0) that the actual phenotypical differences will fall in our expected range of values from our monozygotic twins given heritability for estimated traits, against the alternative hypothesis (H_a) that the actual phenotypical differences will be greater than our expected range of values from our identical twins. To test these hypotheses, we will measure various physiological and anthropometric variables. Collected data will be used to estimate the phenotypic and environmental distance between the pair of twins. The expected differences in phenotypes will be compared to the observed differences, and these values will be analyzed with a 95% confidence interval. Our findings could uncover relationships between environments and phenotypic traits.