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**Ancillary Study Title:** The Relationship between Dietary Intake, Gene-Nutrient interactions and Heart Disease in the Jackson Heart Study.

**Project Overview:**

Mexican Americans. (AHA, 2005). However, the reasons for this disproportionate disease burden are not well understood. This study aims to contribute to our understanding of this health disparity by examining the interaction between genetics and nutrition in the development of varying lipid profiles related to cardiovascular risk factors in African-Americans in the Jackson Heart Study Cohort. Specifically we are investigating whether or not dietary fatty acid intake such as saturated fat, polyunsaturated fat and trans- saturated fat interact with specific genetic polymorphisms of genes involved with lipid metabolism and synthesis in the Jackson Heart Study Cohort. In conducting this research we will be able to seriously explore the degree to which genetics and diet affect the cholesterol levels of African-Americans in this high CVD risk population.

Our phenotype(s) are serum lipid levels (HDL, LDL, TG, Total Cholesterol, Total Cholesterol to HDL ratio and Lipoprotein a) adjusted for dietary intake of fat. In order to define our phenotype we will conduct a plasma phospholipid fatty-acid analysis, which will allow us to validate the fat-intake to use in the adjustment. After our genotype is defined we will determine the heritability of this phenotype using the Family Sub-study. In addition we will also identify the regions of the chromosome that are associated with this phenotype and selected specific candidate genes for further investigation. This investigation will conclude with association study to determine the relationship between specific single nucleotide polymorphisms (SNPs) as well as haplotypes and the diet-adjusted lipid phenotypes.