Sex Differences in Human Aortic Smooth Muscle Cell Phenotypes
(Technical Report)

Food Access: A Racial and Socioeconomic Problem
(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis

Cardiovascular diseases (CVD) account for 31% of all deaths worldwide. Coronary Artery Disease (CAD) constitutes 43.2% of all CVD (Benjamin, E et al., 2017). Environmental, lifestyle, and genetic factors contribute to the likelihood of developing CAD. Data from the Global Use of Strategies to Open Occluded Coronary Arteries in Acute Coronary Syndromes IIb study has shown that CAD presents differently clinically in males than in females (Perdoncin E et al, 2017). Thus, the proposed project will investigate differentially expressed genes (DEGs) in males and females using human aortic smooth muscle cell RNAseq datasets. If there are such genes, then therapies could potentially focus on targeting these specific genes or generally prove that men and women would need different treatment plans in treating CAD.

The STS thesis will study the socioeconomic and racial patterns that are correlated with places with high food insecurity and food deserts. It is shown that places with a high percentage of people with lower socioeconomic status and/or a high percentage of minorities is correlated with food insecurities and food deserts. This leads to these groups of people living on an unhealthy diet compared to their white, affluent counterparts (Kirkpatrick, 2012). Even the policies set in place, like food stamps, isn't enough to bridge that gap or even supply these families and individuals with enough resources to be able to afford a healthy diet (Leib, n.d.). The STS thesis is correlated with the Capstone. One of the factors that affect the risk of developing CAD is an unhealthy diet. Therefore, the relationship between these two theses hopes to shed light on the correlation of high-risk factors of developing diseases and racial and socioeconomic patterns.