The Combined Effects of Exercise and Inhibition of the Renin Angiotensin System (RAS) on Blood Pressure, Endothelium Function and Gene Expression for the RAS in the Spontaneously Hypertensive Rat (SHR).

The goal of this research project is to investigate the mechanisms underlying the prolonged blood pressure lowering effects of Captopril (ACE-Inhibitor), following withdrawal of treatment in the Spontaneously Hypertensive Rat (SHR, an animal model for essential hypertension). Additionally, we will investigate the combined effects of exercise training and Captopril treatment on blood pressure, endothelium function and gene expression of the RAS in the SHR. Hypertension (High Blood Pressure) is a major health issue in the United States, which disproportionately affects African Americans. Data from studies may provide basic science evidence for the development of a prophylactic ACE-I/Exercise regimen for individuals who are known to be genetically at risk to develop hypertension. Students will actively participate in hypothesis driven research, learning basic laboratory techniques used in a physiology/molecular biology laboratory.

Specific Aim 1) Define the coupled effects of captopril treatment/withdrawal and moderate exercise training on blood pressure in the SHR.

Specific Aim 2) Determine the coupled effects of captopril treatment/withdrawal and moderate exercise training on endothelium function.

Specific Aim 3) Define the nature of the relationship between blood pressure, endothelium function and gene expression of the RAS in exercise/captopril treated SHR.