

## Abstract

Elevated levels of homocysteine are associated with increased cardiac risk. The molecular mechanism responsible for the increased risk of developing congestive heart failure is unknown. This is in spite of the fact that heart failure is a major cause of death in this country especially with our aging population. The overall goal of this research project is to understand the molecular mechanism by which homocysteine and other naturally occurring derivatives modify muscle function. It is our hypothesis that homocysteine activates the  $\text{Ca}^{2+}$  release channel from both skeletal and cardiac muscle sarcoplasmic reticulum. In this study we will examine the effects of nanomolar concentrations of homocysteine and two biologically relevant derivatives on the function of the  $\text{Ca}^{2+}$  release channel from cardiac and skeletal muscle sarcoplasmic reticulum. We will determine how function is modified at the single channel level, at the level of ryanodine binding and at the cellular level.