

James & Esther King Biomedical Research Program

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*2009 Program
Florida Research Challenge
(2-year project)*

Project Title: Regulated and Aberrant Glycosylation Modulate Cardiac Excitability

Project Summary: Heart disease is the number one cause of adult death, with millions of people suffering from cardiac arrhythmias. Tobacco use increases susceptibility to cardiac arrhythmias. Normal heart rhythm is produced by the orchestrated conduction of electrical signals (action potentials, AP) throughout the heart. Action potentials are produced by the regulated activity of voltage-gated ion channels. Slight changes in channel activity can alter AP waveform and lead to arrhythmias. Recently we showed that regulated glycosylation likely alters cardiac conduction. The goal of this project is to test the hypothesis that regulated and aberrant glycosylation modulate cardiac electrical signals using a series of methods at several organizational levels from whole animal to molecular. If the hypothesis is viable, then a novel mechanism for control and modulation of cardiac function would be described. Cardiac function would then be studied in light of this newly described mechanism, including questioning the role of tobacco in modulating cardiac function through changes in the glycan structures produced by the heart.