

James & Esther King Biomedical Research Program

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*Biology
Edward Waters College*

*2009 Program
Historically Black Colleges and Universities
(1-year project)*

Project Title: Molecular Analysis of Cardiac Modulatory Neurotransmitters and Study of Their Association with Smoking

Project Summary: Smoking is a risk factor for heart disease and known to cause various types of cancers. It is associated with increased death rate among patients with cardiac and vasculatory diseases. We propose that induction of various neurotransmitters by nicotine affect cardiac function. It is also responsible for cardiac remodeling. Nicotine, a major substance inhaled by smokers, affects healing after a heart attack by impairing the function of immune system. In this regards, some reports indicate that nicotine can impair the release of factors that stimulate the function of the cells responsible for the healing of tissues. We are proposing a new study to measure the changes in levels of neurotransmitters in African American smokers that also have their role in cardiac function. The study has been designed specifically for African American population, because they have been found to respond differently to available treatments. To understand this variation, we are proposing to study polymorphisms in genes of key receptors and regulators of nicotine metabolism. The outcome of study will help us to understand the molecular basis of variations in smoking populations of African Americans and will provide a tool to develop an effective treatment.