

James & Esther King Biomedical Research Program

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*Tobacco Research & Intervention Program
H. Lee Moffitt Cancer Center & Research Institute*

*2009 Program
New Investigator (3-year project)*

Project Title: Genetic Moderation of Nicotine-Induced Cognitive Enhancement

Project Summary: Smoking tobacco remains the top preventable cause of disease and death in our society. Nicotine enhances attentional control. This enhancement may be greater among individuals who have attentional deficits. Therefore, the acute effects of nicotine on attention during the earlier stages of nicotine use may result in greater reinforcement among individuals who are lower in attentional control. Differences at the molecular genetic level may in part underlie this association. We will examine genetic variants associated with neurotransmitters involved in both smoking/nicotine and attentional control. In order to avoid nicotine withdrawal as an alternative explanation, nonsmokers will be given nicotine patch at the beginning of one experimental session and placebo patch during the other. Participants will complete tasks that assess attentional control. Brain activity data associated with performance on these tasks will also be examined. We hypothesize that individuals with genetic variants indicative of reduced attentional control will show greater improvements on attentional control following nicotine relative to placebo patch. The information gained from this research will contribute to our understanding of nicotine use in relation to attentional deficits. We expect to utilize the information gained from this research to guide the development and evaluation of smoking cessation treatment programs.