

James & Esther King Biomedical Research Program

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*Molecular Pharmacology & Physiology
University of South Florida*

*2009 Program
Team Science Program
(2-year project)*

Project Title: Synthesis and Screening of Sigma Ligands for Stroke Treatment at Delayed Time Points

Project Summary: Every year over 800,000 Americans suffer a stroke, and 170,000 of these individuals will die as a consequence of this disease. One of the most significant consequences of cigarette smoking is a pronounced increase in the risk for ischemic stroke. Currently, the only FDA-approved treatment for stroke has a narrow, three-hour window for use and has potentially hazardous side effects. Only 1-2 percent of all stroke patients are currently candidates for this treatment, and thus, there is a great need to discover new drugs for this disease. Finding new effective therapies to treat stroke will save not only many patients' lives but also will likely enhance the quality of life for these individuals by decreasing the severity of physical disability caused by the stroke. We have recently discovered that the compound, 1,3-di-o-tolylguanidine (DTG) can be safely administered to rats after experimental stroke. This compound reduces the damage to the brain caused by stroke injury by at least 80 percent and opens the window of treatment to at least 24 hours, an eight-fold increase over the current available therapy. The goal of this grant is to develop new drugs based on the structure of DTG to improve stroke treatment further by expanding the therapeutic window and decreasing the likelihood of adverse side effects.