

James & Esther King Biomedical Research Program

Sang, Q.-X. Amy

*Chemistry and Biochemistry
Florida State University*

*2010 Program
Technology Transfer Feasibility
(1-year project)*

Project Title: MMP Inhibitor Stroke Drug Development

Project Summary: Strokes are a leading cause of disability in the world and especially in Florida's aging population, with the use of tobacco a significant risk factor doubling the threat. Caused by a clot in the artery, acute ischemic strokes are the most common type of stroke, and there is only one FDA-approved treatment, Roche's drug Activase (tPA). Although it dissolves the problematic clot, tPA can only be used within three hours of onset to qualified patients. This stems from the serious side effect of brain hemorrhaging and is caused by the breakdown of the blood brain barrier (BBB), which may result in brain damage and death. If a complementary drug for tPA could be designed to stop BBB failure, this risk would be significantly decreased, more patients would qualify for treatment, and the odds of a favorable outcome for victims could increase. In this light, we have developed novel compounds to protect the BBB, and upon refinement, these compounds may serve as prototypes for new drugs augmenting the current treatment. In the USA, where someone on average suffers a stroke every 40 seconds, strokes are one of the leading causes of functional disability in ~45 million Americans. As these statistics indicate, there is an urgent, unmet need for therapies to treat patients with mini- and major- ischemic strokes. As such, a knowledge gap must be filled to identify suitable agents for stroke drug development and obtain NIH funding to further investigate these experimental therapeutics.