

***Grewer, Christof T.***

*Department Physiology and Biophysics  
University of Miami School of Medicine*

*2004 Program  
New Investigator (3-year project)*

**Project Title:** Investigation of the Mechanism of GABA Forward and Reverse Translocation by Neuronal GBA Transporter GAT-1

**Project Summary:** Stroke is a well-known health related risk associated with regular cigarette smoking. Stroke is typically the result of the rupture or blockage of small blood vessels in the brain, eventually leading to the damage or death of nerve cells in the affected brain region. The result of this damage may be impairment of memory, speech or motor control, and even death. In order to alleviate the adverse effects of stroke and to find a potential therapy, researchers need to understand the cellular processes that lead to the uncontrolled death of nerve cells under conditions of energy deprivation as they are encountered during stroke. The proposed project deals with the investigation of one of these transporter proteins called GABA (gamma-amino-butyric acid) that is released from these cells in an uncontrolled manner during a stroke. The research proposed will specifically address the problem of how this release process works on a molecular level and how to modulate or block it. A detailed understanding of this mechanism can then be used to develop better drugs that can prevent stroke-induced GABA release and, therefore, alleviate some of the adverse effects associated with stroke.