

James & Esther King Biomedical Research Program

Conner, Gregory

*Dept. of Cell Biology and Anatomy
University of Miami*

*2011 Program
Bridge
(1-year project)*

Project Title: Regulation of Airway Lactoperoxidase Host Defense

Project Summary: Chronic bronchitis is an inflammation of the bronchi and is characterized by poor clearance of respiratory mucus and is associated with increased bronchial production of reactive oxygen-containing molecules such as hydrogen peroxide. An increase in bronchial hydrogen peroxide, seen after many stimuli (e.g. tobacco smoke) is correlated with decreased mucus clearance, inflammation, and mucus hypersecretion, which are all hallmarks of chronic bronchitis. This project's long-term goal is to understand the mechanistic relationships between acutely and chronically increased bronchial hydrogen peroxide and airway diseases associated with decreased mucus clearance namely chronic bronchitis and COPD. The project will test the hypothesis that increased bronchial hydrogen peroxide is linked to increases/decreases in mucus clearance by changing ion channel activity in the cell membranes. While increased hydrogen peroxide production is normally intended to stimulate clearance as a host defense mechanism, deleterious airway changes upon chronic hydrogen peroxide exposure lead to chronic bronchitis and COPD. These experiments may offer opportunities for development of new therapeutic approaches.