

## **ANALYSIS OF MOUSE LUNG INFLAMMATION FOLLOWING ASPIRATION EXPOSURE TO BREVETOXIN-2.**

Kelli M. Sas<sup>1</sup> and John E. Baatz<sup>1,2</sup>

<sup>1</sup>*Marine Biomedicine and Environmental Sciences Center, Medical University of South Carolina, Charleston, SC*

<sup>2</sup>*Department of Pediatrics, Medical University of South Carolina, Charleston, SC*

Brevetoxins are potent marine algal toxins produced by *Karenia brevis*, the organism responsible for Florida red tide. Brevetoxin exposure through ingestion or inhalation has been associated with a variety of adverse effects including human illness, marine mammal and seabird deaths, and massive fish kills. Humans and manatees have been identified as the most at-risk groups for inhalation exposure, and previous reports of natural exposures in both humans and manatees have suggested that brevetoxin inhalation may result in an inflammatory response in the lung. In this study, our goal was to test the hypothesis that brevetoxin exposure results in pathological changes in the mouse lung, characterized by immune cell infiltration and tissue inflammation. C57BL/6 mice were exposed to 5 ug/kg brevetoxin-2 or sham control through aspiration exposure for 1, 4, 8, 16, or 24 hrs. Histological analysis revealed immune cell infiltration in both the airways and surrounding tissue at 16- and 24 hr. post-exposure with the infiltrate consisting primarily of neutrophils and monocytes, often resulting in multinucleated cell obstructions of airways. Additionally, areas of bronchiolar epithelium disturbances were seen at 24 hr. post-exposure. These results indicate that brevetoxin inhalation does trigger an immune response in the mouse lung, and further analysis of bronchoalveolar lavage fluid at 16- and 24 hr. will determine alterations in cytokine levels following brevetoxin inhalation.

Acknowledgements- College of Medicine, College of Graduate Studies, Marine Biomedicine and Environmental Sciences Center, Department of Pediatrics. All procedures were approved by the Institutional Animal Care and Use Committee at MUSC.