NIH Award from the National Heart, Lung and Blood Institute

Principal investigator: Jacob I. Sznajder, pulmonary Feinberg School of Medicine

- Project: Pathophysiology of Alveolar Epithelial Lung Injury
- Start Date: June 1, 2009
- Total Award Amount: $21,280

How the results of this project will benefit society:
The insights gained from the data generated from these studies will provide novel molecular targets for the development of new therapeutic strategies to treat patients with lung injury.

The problem the project is trying to solve:
This research is founded on the hypothesis that during lung injury, recovery of alveolar epithelial cell function is of crucial importance in the prevention of disordered healing, fibrosis and thus the outcome of patients with the acute respiratory distress syndrome (ARDS).

How this project will work:
We have assembled a highly interactive group of investigators who have worked collaboratively, productively and synergistically in the previous cycle of the grant. We propose to study alveolar epithelial cell injury and repair via three interrelated projects and three supportive cores. In Project # 1 we will focus on the mechanisms regulating alveolar epithelial function during hypoxia as it pertains to Na,K-ATPase phosphorylation-endocytosis and ubiquitination-degradation. In Project # 2 we will determine the role of intermediate filaments in alveolar epithelial wound repair and remodeling. In Project # 3 we will investigate the mechanisms of alveolar epithelial cell apoptosis in the development of lung injury and repair. Collaborative studies have been conducted for each of the projects and the preliminary results support the feasibility of this proposal.

This Program Project focuses the multidisciplinary expertise of the investigators on the elucidation of mechanisms contributing to lung epithelial cell injury in clinically relevant models of injury.

These projects are interactive conceptually and programmatically, where the aggregate of the projects is greater than the sum of its parts. Their collective outcome will provide a composite picture of the regulation of the Na,K-ATPase and intermediate filaments in the alveolar epithelium during injury and determine the role of alveolar epithelial cell apoptosis in the pathogenesis of lung injury. This award is funded under the American Recovery and Reinvestment Act of 2009, NIH Award number: 3P01HL071643-06A1S1.