J. Edwin Blalock, PhD was awarded the second renewal of his longest-running R01 grant entitled "A New Pathway of Neutrophilic Inflammation," making him the sole investigator in the Department of Medicine with four R01 grants. Dr. Blalock joined the Department of Medicine as a Professor in the Division of Pulmonary, Allergy, and Critical Care Medicine and became the Scientific Director of the Lung Health Center in 2009. Research in the Blalock laboratory has focused on understanding the causes of and potential treatments for the unrelenting neutrophilic inflammation which is a driving force in many chronic lung diseases in humans.

The Blalock lab has found that at inflammatory sites, neutrophil degradation of connective tissue proteins generates novel peptide fragments that attract a new wave of neutrophils. In certain individuals, this neutrophil-mediated process becomes uncontrolled, leading to self-propagating inflammation and chronic disease. In particular, a tripeptide (proline-glycine-proline, PGP) derived from collagen fragmentation, has been shown to attract and activate neutrophils via receptors previously thought to be only utilized by classical chemokines such as interleukin-8. Moreover, chronic administration of this peptide into the airways of experimental animals causes robust neutrophil influx and a disease similar to emphysema with alveolar enlargement and right ventricular hypertrophy.

Dr. Blalock’s research efforts have focused on airway disorders characterized by a chronic neutrophilic inflammation such as chronic obstructive pulmonary disease (COPD), cystic fibrosis (CF) and lung transplantation organ rejection. Dr. Blalock has mentored several post-doctoral fellows and graduate students and is currently mentoring K-awardees in his laboratory.