COBRE pilot funding supported the revision of my K99/R00 grant application, which was subsequently awarded, entitled “Polymicrobial Interactions in the Lung.” My K99/R00 grant examines the mutually beneficial interaction between the Gram-negative opportunistic pathogen, *Pseudomonas aeruginosa* and respiratory viruses in the lung. These superinfections are thought to be responsible for pulmonary exacerbations and increased morbidity and mortality in patients with cystic fibrosis (CF), chronic obstructive pulmonary disease (COPD), ventilator-associated pneumonia and non-CF bronchiectasis. Completion of this K99/R00 career development grant will uniquely position me for an independent research career, with expertise in host epithelial cell biology and the immune response to pathogens.

COBRE pilot funding supported studies to test the hypothesis that the host immune/cytokine response to a respiratory pathogen affects bacterial virulence (i.e. bacterial virulence factor secretion). I propose that a novel feedback mechanism exists whereby *P. aeruginosa* responds to interferon-γ release as a signal that CD8+ cytotoxic T cells and viral immunity is functional in the host, and therefore increases bacterial virulence factor secretion to overcome host immune defenses. To my knowledge, these are the first data to suggest that bacteria alter their toxin secretion in response to host defense. The studies proposed in my K99/R00 application are aimed at elucidating how *P. aeruginosa* reduces the ability of the lung to clear viral infections and, ultimately, identify new therapeutic approaches to control combined *P. aeruginosa* and respiratory virus infections.