1145-92-1780 **Sarah Minucci**, **Rebecca Heise**, **Michael Valentine**, **Franck Kamga Gninzeko** (areynolds2@vcu.edu) and **Angela Reynolds*** (areynolds2@vcu.edu). *The modeling of Ventilator-Induced Lung Injury focusing on age-dependent stretched-induced inflammation at the cellular level: an Agent Based Model and ODE model.*

The elderly are the largest population requiring mechanical ventilation, and age is a predictive factor for the severity of ventilator-induced lung injury (VILI). VILI affects 800K patients/year with 53% of patients being 65 or older. Harmful mechanical stretch of the alveolar epithelium is a recognized mechanism of VILI, yet little is known about how mechanical stretch leads to inflammation and how this response changes with age. Therefore, we modeled age-dependent cellular level dynamics of this inflammatory response and alveolar type II (AT2) cells using both an agent based model and an ODE model. The ODE model was developed by expanding previous models for inflammation to include different immune cell types, neutrophils and various macrophage phenotypes and AT2 cells. Both models rely on experimental results for calibration. This talk focuses on this progression of models and how aging effects the initial conditions and resulting dynamics in these models. (Received September 24, 2018)