1145-92-121　　　　　**Marcella M Torres*** (`torresmm@vcu.edu`), **Angela Reynolds**, **Rebecca Segal** and **Shobha Ghosh**. *Parameter estimation and predictive modeling in a model of peritonitis focusing on the sequential immune cell response.*

Macrophages can be activated to a more inflammatory M1 phenotype or to an M2-like phenotype which promotes the resolution of inflammation. Problems with this phenotypic switch can result in a population imbalance that leads to chronic wounds or disease, and therapeutic interventions that target macrophages have been proposed and implemented in diseases that feature chronic inflammation such as diabetes mellitus and atherosclerosis. We have developed a model for the sequential influx of immune cells in the peritoneal cavity in response to a bacterial stimulus that includes macrophage polarization - the first of its kind to be fit to experimental data. With this model we are able to reproduce the expected timing of sequential influx of immune cells and mediators in a general inflammatory setting. Weighted least squares parameter estimates were obtained using trust region optimization in logarithmic parameter space. We then explored local structural and practical identifiability of the proposed model a posteriori, and obtained an identifiable subset of parameters that allows for simulation of proposed therapies. (Received August 03, 2018)