1154-A0-71 **Karin Leiderman***. *Recent challenges and successes in mathematical modeling of blood clotting*

Blood clot formation is a complex and nonlinear process that occurs under flow and on multiple spatial and temporal scales. Defects and perturbations in the clotting system can result in serious bleeding or pathological clot formation, but due its complexity, the responses and their underlying mechanisms are challenging to predict. Mechanistic mathematical models of blood clot formation and coagulation can elucidate biochemical and biophysical mechanisms, help interpret experimental data, and guide experimental design. In this talk I will briefly describe such models and show how our integrated mathematical and experimental approach has facilitated discovery of previously unrecognized interactions within the clotting system. I will also discuss a recent study to determine how the major clotting enzyme, thrombin, is strongly sequestered by the polymer that thrombin itself produces. Using Bayesian inference, we learned model parameter distributions from experimental data, but for the model to best fit the data, we had to make an additional assumption that thrombin could become irreversibly sequestered; this led to a new hypothesis that thrombin becomes physically trapped during polymerization. (Received July 30, 2019)