1135-VN-3194 **Michael T Stobb*** (mstobb@ucmerced.edu), UC Merced, 5200 Lake Rd, Merced, CA 95340, and **Suzanne Sindi** and **Karin Leiderman**. *Using Uncertainty Quantification to Assess the Significance of Product Inhibition in Biochemical Assays.*

Blood coagulation is a complex network of biochemical reactions that is necessary for blood clot formation. Many of the coagulation reactions are mediated by enzymes to accelerate the rate at which they occur. Chromogenic substrates are frequently used to measure the activity of specific enzymes, but often the exact dynamics of the reaction are not well understood. In this work, we combine mathematical modeling with experimental data and determine the product created by the chromogenic substrate inhibits the reaction it was developed to measure. In our approach, we develop an ODE model and incorporate uncertainties in biochemical reaction rates and initial conditions. We use the output from this model to assess the likelihood of our experimental data. The posterior distribution for the parameter corresponding to inhibition suggests product inhibition plays a significant role in dynamics. Our findings suggest that when experiments use chromogenic substrates, in particular long time assays as in coagulation systems where large amounts of product are generated, the role of product inhibition should be considered. This work shows that precise quantitative agreement is attainable between experiments and mathematical models when both are designed and developed simultaneously. (Received September 27, 2017)