1135-34-1428 **Joe Latulippe*** (jlatulip@norwich.edu), Department of Mathematics, 158 Harmon Dr., Northfield, VT 05663, and **Joseph Minicucci**. *A mathematical model for Amyloid beta influenced calcium signaling through the IP_3 receptors.* Preliminary report.

Amyloid beta (Aβ) peptides have been linked to the pathogenesis of Alzheimer's disease by altering intracellular calcium regulatory mechanisms. In this study we use mathematical modeling and analysis to study the effects of Aβ on calcium regulation by specifically tracking the contribution through the 1,4,5-Inositol-triphosphate (IP_3) receptor. Our goal is to better understand how various levels of Aβ affect the IP_3 production cascade and leads to subsequent calcium release through IP_3 receptors on the endoplasmic reticulum. We develop a closed-cell calcium model and show how we calibrated our model to existing experimental data. We also use global sensitivity analysis to understand how model parameters affect solutions. We further investigate the behavior of the model under various parameter regimes and explore how different levels of Aβ affect model solutions. By linking experimental data with model solutions, we seek to precisely identify the physiological processes in the IP_3 production mechanism that are directly influenced by Aβ. These results can then be used to better understand the role that Aβ plays in altering intracellular calcium signals. (Received September 22, 2017)