1135-92-1429 **Lake R Ritter***, Math Building D, 1100 S. Marietta Pkwy MD 9085, Marietta, GA 30060. *A delay differential equation model of activation of endothelial nitric oxide synthase.*

Regulation of nitric oxide (NO) serves several functions in the vasculature related to homeostasis, adaptation, and development. Endothelial nitric oxide synthase (eNOS) is the primary enzyme in the vasculature that synthesizes and regulates NO. Various enzymes, kinases and phosphatases, influence eNOS through phosphorylation and dephosphorylation of its amino acid sites. Evidence of oscillation between inactive and active states of eNOS has been detected experimentally consistent with feedback mechanisms in signal transduction. Here we consider a feedback model of eNOS activation in the form of a system of coupled ordinary differential equations. By the introduction of time delays, we account for the more complex dynamics of a signal cascade (formation of protein complexes, diffusion, interactions of unspecified intermediaries, etc.). Under conditions on the model parameters, varying the time delay may give rise to a Hopf bifurcation. Properties of resulting oscillatory solutions are discussed. (Received September 22, 2017)