

1109-92-290

Nitin Krishna, Hannah Pennington, Caanan Coppola, Marisa Eisenberg and Richard Schugart*, richard.schugart@wku.edu. *A Mathematical Model for the Interactions of MMP-1, TIMP-1, and ECM in a Wound.*

In this talk, a mathematical model is presented describing interactions among matrix metalloproteinases (MMP-1), their inhibitors (TIMP-1), and extracellular matrix (ECM) in the healing of a neuropathic diabetic foot ulcer. De-identified patient data for modeling were taken from Muller et al. (2008) and classified into two patient subgroups of “good” and “bad” healers. Model parameters for both subgroups were estimated curve fitting the data for each subgroup. Multiple sensitivity analyses were conducted and compared, where we describe one parameter as being locally sensitive, but globally insensitive. Results, implications, and extensions of this work will be discussed. (Received February 03, 2015)