1135-VC-2870   **Nigar Karimli*** (`nigar.karimli042@topper.wku.edu`), **Ayush Prasad** and **Richard Schugart**. *Identifying Optimal Sampling Distributions for Individual Patients.*

Because the medical treatment of diabetic foot ulcers remains a challenge for clinicians, a quantitative approach using patient data and mathematical modeling can help researchers understand the physiology of the wounds. In this work, the modified version of the previously developed mathematical model defining the interactions among matrix metalloproteinases, their inhibitors, extracellular matrix, and fibroblasts in the healing process of a diabetic foot ulcer is used (Krishna et al., 2015). We estimate parameter values using ordinary least-squares for the model curve-fitted to individual patient data from Muller et al. (2008). However, these model parameters can be estimated more efficiently and accurately by implementing an optimal design method that calculates optimal observation times for collecting clinical data. We introduce an SE-optimal design (standard-error optimal-design) by using a Fisher Information Matrix (FIM) to determine the optimal time evolution of sensitivity values. The goal of this work is to quantify and understand differences between patients to predict future responses and individualize treatment for each patient. Moreover, additional results using various parameter estimation techniques will also be presented. (Received September 26, 2017)