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**Judy Day\*** (judyday@utk.edu), **Seddik Djouadi**, **Wassim Bara** and **Greg Zitelli**. *Modeling, State Estimation and Control of Complex Immune Responses*.

This talk will provide a historical overview and summarize recent strides in the endeavor to capture the rich, complex dynamics of the acute inflammatory response and effectively apply control strategies to correct dysfunctional responses. From ordinary differential equations (ODE) models containing many interacting variables to small abstract ODE representations of the inflammatory response to infection, substantial strides have been made to gain insight into this complex process through the modeling process. Inherent in these efforts is the goal of translating the insights from these models toward useful and real-world application. Toward achieving that goal, we also present recent work on the application of control methodologies on an ODE model of inflammation with the object of directing inflammatory response trajectories of a virtual patient population to a healthy resolution. (Received August 10, 2013)