

1096-VG-2674 **Sean M Lavery*** (slavery@uco.edu) and **Bryan Dawkins**. *Anti-tumor immune dynamics: using ODEs to model a novel cancer therapy*. Preliminary report.

We use a system of differential equations to describe interactions between cancer cell populations and components of the immune system in a host undergoing treatment by a promising anti-tumor treatment. In particular, we focus on an anticancer laser immunotherapy that helps train the body's own immune system to detect and destroy cancer cells, including metastases. Using the model we explore the dynamics and post-therapy outcomes of a variety of treatment programs, and identify features of both the program and the host immune system that facilitate cancer clearance. To analyze the model with numerical methods, we plan to use Latin Hypercube Sampling to help explore a potentially large, and somewhat uncertain, parameter space in this high-dimensional dynamical model. When possible, we plan to make frequent comparisons between model output and experimental data provided by our collaborators. Anti-tumor antibodies are thought to be important in cancer clearance, but their role in this treatment is not as well understood dynamically or mechanistically. We hope to use the model to elucidate the dynamics and role of antibodies in cancer clearance. (Received September 17, 2013)