KATEY BURNER & QING WANG, Dept. of Computer Sciences, Mathematics and Engineering, Shepherd University, Shepherdstown, WV, 25443. Effects of a Radiation Therapy on Tumor Growth: Analysis in Comparison to Experimental Data.

Radiotherapy (RT) is one of the most common and effective cancer treatment options. Due to the need for radiation therapy, research on optimizing the effectiveness of RT is critical. Mathematical modeling and computer simulations provide powerful tools to investigate potential optimal dosage and timing for tumor control. In this work, we have developed a mathematical model using a system of impulsive ordinary differential equations (IODE) to describe how RT interacts with other major players of the tumor microenvironment. Analysis was conducted for the tumor model coupled with experimental data. Future work includes analyzing ways to maximize the effects of RT using computer simulations and experimental data. The objective of this study was to develop a platform to improve cancer management by manipulating dose and fractionation schedules of RT. *This study is supported by NIH Grant P20GM103434 to the West Virginia IDeA Network for Biomedical Research Excellence.*