

CHRISTIAN SHIMER#, PETER HOPKINS, QING WANG, ZHIJUN WANG, and DAVID J. KLINKE, AND, Department of Computer Science, Mathematics and Engineering, Shepherd University, Shepherdstown, WV, 25443, Department of Microbiology, Immunology & Cell Biology, West Virginia University, Morgantown, WV, 26506. **A gene therapy model to treat liver-implanted tumors.**

An expression vector based on the Semliki Forest Virus (SFV), an alpha virus replicating in the cytoplasm of infected cells originally discovered in the Semliki Forest in Uganda, was developed to express interleukin 12 (IL-12) and SVF-IL-12 were shown to induce potent antitumor response against liver implanted colon tumor cells in immunocompetent mice in a recent study by Jose I. Quetglas and co-investigators [J. I. Quetglas, et. al, J. of Immunology 2013]. The researchers reported that the tumor-specific CD 8+ T cells in responder mice persisted at greater numbers and for a long period of time while maintaining enhanced effector functions in contrast to those of non-responder animals. The long-lasting persistence and activity of tumor-specific CD8+ T cells from responder mice might be mediated by the production of IFN-alpha by cells infected by SFV as the replication of this virus can induce type I IFN response. We proposed a mathematical model based on a set of ordinary differential equations with an attempt to describe the SFV-IL-12 antitumor efficacy. The project was supported by NIH Grant P20GM103434 to the West Virginia IDeA Network for Biomedical Research Excellence and the West Virginia Higher Education Policy Commission Division of Science and Research SURE Grant Program.