1163-92-951 **Kathleen M Storey*** (storeyk@umich.edu) and **Trachette L Jackson**. *A cellular automaton model of the spatial and immune-related dynamics involved in a combination of oncolytic viral therapy and anti-PD-1 immunotherapy.*

Oncolytic viral therapies and immunotherapies are of growing interest to cancer researchers and clinicians, due to their selectivity for tumor cells over healthy cells and their immunostimulatory properties. Uncertainty remains regarding the circumstances under which the immune system effectively assists in eliminating tumor cells. We develop a three-dimensional cellular automaton (CA) model of a lethal brain tumor, glioblastoma, undergoing treatment with a combination of an oncolytic Herpes Simplex Virus and an anti-PD-1 immunotherapy. We extend our previous work, which models this combination therapy using an ordinary differential equation model, to the spatially explicit CA model, in order to consider the spatial effects of the treatment. We use a mechanistic approach to model the interactions between distinct populations of immune cells, incorporating both innate and adaptive immune responses to oncolytic viral therapy, and including a mechanism of adaptive immune suppression via the PD-1/PD-L1 checkpoint pathway. We discuss the role of several significant parameters involved in the innate and adaptive immune response to both treatment modalities. Additionally, we utilize our model to determine optimal viral dosing, in both the temporal and spatial contexts. (Received September 14, 2020)