1163-92-492 **Adrianne L Jenner***, adrianne.jenner@umontreal.ca, Montreal, Quebec , Canada, and **Munisha Smalley**, **Aaron Goldman**, **Paul Macklin** and **Morgan Craig**. *Exploring the impact of glioblastoma stromal heterogeneity on oncolytic virotherapy using agent-based modelling.* Preliminary report.

Oncolytic viruses (OV) are an exciting immunotherapeutic modality being investigated for the treatment of glioblastoma multiforme (GBM), an aggressive brain cancer with a poor clinical prognosis. Unfortunately, promising pre-clinical investigations of immunotherapies have led to disappointing trail results. Recapitulating the tumour microenvironment (TME) and finding useful pre-clinical models to elucidate the efficacy of OVs is, therefore, crucial to improve OV treatments. Leveraging pre-clinical GBM spheroids, we constructed an agent-based representation for the infiltration of an OV in patient GBM samples. The model was developed in PhysiCell, an open-source cell-based simulator, and used to determine OV characteristics that optimized therapeutic efficacy with respect to the stromal density. Overall, our results showed that the intracellular viral replication rate is the primary driver of OV infiltration patterns observed in patient samples. In addition, we quantified the relationship between stromal density and treatment efficacy and found a threshold above which treatment was no longer as effective. This work has implications on the development of OVs for the treatment of GBM and in our understanding of the impact of spatial heterogeneity on new treatment approaches. (Received September 08, 2020)