

5. 250 Word Lay Summary

The malignant phenotype of human oligodendrogliomas reflects the heterogeneity of cells that compose human gliomas and that they arise from a small subset of developmentally arrested, replication-competent neural progenitor cells. Very recently, several groups have shown that these “tumor stem cells” exist and can be isolated by sorting for cell surface marker CD133. In preliminary studies my colleagues and I have shown **i)** that 100% of CD133-positive stem cells in fresh surgical isolates of human oligodendroglioma express the gliogenic transcription factor *OLIG2* and **ii)** that *OLIG2* is essential for tumor formation in a mouse model of gliomas that emulates human gliomas at a genetic level. The goal of this translational application is to link the mouse and human data. My specific aim is to test the hypothesis that *OLIG2* is essential for the malignant growth of human CD133-positive human oligodendroglioma stem cells in *in vitro* and *in vivo* model systems. This will provide preliminary data for a R01 grant to develop targeted approaches to *OLIG2* for the treatment of human oligodendrogliomas.