



## CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:  
RP140350

Project Title:  
Integrated Human Herpesvirus 6 as a Novel Heritable Risk Factor for  
Glioma

Award Mechanism:  
High Impact/High Risk

Principal Investigator:  
Scheurer, Michael

Entity:  
Baylor College of Medicine

### Lay Summary:

Gliomas are the most common type of adult brain tumor, and what causes these tumors remains largely unknown, despite several genetic studies. Sometimes gliomas run in families, but genetic mutations only explain a small proportion of gliomas. Human herpesvirus 6 (HHV6) is a virus with very unusual properties. This virus can integrate itself into an infected person's DNA and be inherited by their children. Previous research has shown that this virus may be associated with certain cancers, like lymphomas and leukemias, and it is present in tissue samples from some brain tumors. HHV6 can inactivate an important tumor suppressing protein in infected cells, and by integrating into host DNA, can also destabilize a part of the host's chromosome (sub-telomere) that is relevant to cancer development. For these reasons, it is important to clarify the role of this virus in glioma development. More research is needed, but no studies have investigated if the integrated form of the virus being passed down through families could explain why some families have more members affected by glioma than others. Aim 1 of our study is to investigate whether individuals with glioma are more likely to carry integrated HHV6 compared to their cancer-free family members, unrelated healthy controls, and individuals who have glioma but not a family history of brain tumors. We will also examine how the virus is passed down among families who have >1 member with glioma. In Aim 2, we will check to see if individuals who have glioma, but are not found to carry the inherited form of HHV6, may still have the virus present in their tumors. If HHV6 is involved in familial glioma, this knowledge will introduce a new way of thinking about glioma treatment and prevention. Treatments or vaccines that target HHV6 could eventually be developed and tested. Furthermore, the knowledge gained from this study about HHV6 transmission could also be useful to studies on HHV6-associated leukemias and lymphomas.