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## Evolving evidence implicates cytomegalovirus as a promoter of malignant glioma pathogenesis.

[Cobbs CS](#).

### Abstract

ABSTRACT: Human cytomegalovirus (HCMV) was first reported to be strongly associated with human malignant gliomas in 2002. HCMV is a herpesvirus that causes congenital brain infection and multi-organ disease in immunocompromised individuals. Malignant gliomas are the most common and aggressive adult brain tumors and glioblastoma multiforme (GBM), the highest grade glioma, is associated with a life expectancy of less than two years. HCMV gene products encode for multiple proteins that can promote the various signaling pathways critical to tumor growth, including those involved in mitogenesis, mutagenesis, apoptosis, inflammation, angiogenesis, invasion and immuno-evasion. Several groups have now demonstrated that human malignant gliomas are universally infected with HCMV and express gene products that can promote key signaling pathways in glioma pathogenesis. In this review I discuss specific HCMV gene products that we and others have recently found to be expressed in GBM in vivo, including the HCMV IE1, US28, gB and IL-10 proteins. The roles these HCMV gene products play in dysregulating key pathways in glioma biology, including the PDGFR, AKT, STAT3, and monocyte / microglia function are discussed. Finally, I review emerging human clinical trials for GBM based on anti-HCMV strategies.

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