



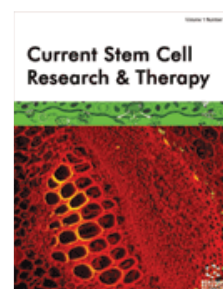
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Stem Cells as Vectors to Deliver HSV/tk Gene Therapy for Malignant Gliomas

pp.44-49 (6) **Authors:** Prakash Rath, Huidong Shi, Joel A. Maruniak, N. Scott Litofsky, Bernard L. Maria, Mark D. Kirk[Sign in](#)

Abstract

The prognosis of patients diagnosed with malignant gliomas including glioblastoma multiforme (GBM) is poor and there is an urgent need to develop and translate novel therapies into the clinic. Neural stem cells display remarkable tropism toward GBMs and thus may provide a platform to deliver oncolytic agents to improve survival. First we provide a brief review of clinical trials that have used intra-tumoral herpes simplex virus thymidine kinase (HSV/tk) gene therapy to treat brain tumors. Then, we review recent evidence that neural stem cells can be used to deliver HSV/tk to GBMs in animal models. While previous clinical trials used viruses or non-migratory vector-producing cells to deliver HSV/tk, the latter approaches were not effective in humans, primarily because of satellite tumor cells that escaped surgical resection and survived due to low efficiency delivery of HSV/tk. To enhance delivery of HSV/tk to kill gliomas cells, recent animal studies have focused on the ability of neural stem cells, transduced with HSV/tk, to migrate efficiently and selectively to regions occupied by GBM cells. This approach holds the promise of targeting GBM cells that have infiltrated the brain well beyond the original site of the tumor epicenter.

Keywords: Glioblastoma multiforme, tropism, neural stem cells, bystander effect, Herpes Simplex Virus / thymidine kinase**Affiliation:** University of Missouri, Division of Biological Sciences, 114 Lefevre Hall, Columbia, MO 65211, USA.

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