

# Glioblastoma gene therapy

The combinatory use of [MicroRNAs](#) and [Long non-coding RNAs](#) with chemotherapeutic compounds, as well as the induction of [suicide genes](#), provide an innovative therapeutic approach for the management of GBM. The understanding of GBM pathogenesis, intrinsic drug resistance mechanism, and targetable oncogenic pathways could lead to establishing novel approaches and techniques to combat GBM <sup>1)</sup>

Gene therapy was developed as a promising approach to treat [High-grade glioma](#).

Varela et al. reviewed completed and ongoing clinical trials employing viral and non-viral [vectors](#) for adult and pediatric HGG, as well as the key supporting preclinical data.

Expert opinion: These therapies have proven safe, and pre- and post-treatment tissue analyses demonstrated tumor cell lysis, increased immune cell infiltration, and increased systemic immune function. Although viral therapy in clinical trials has not yet significantly extended survival of HGG, promising strategies are being tested. Oncolytic HSV vectors have shown promising results both for adult and pediatric HGG. A recently published study demonstrated that HG47Δ improved survival in recurrent HGG. Likewise, PVSRIPO has shown survival improvement compared to historical controls. It is likely that further analysis of these trials will stimulate the development of new administration protocols, and new therapeutic combinations which will improve HGG prognosis <sup>2)</sup>

<sup>1)</sup>

Ghaemi S, Fekrirad Z, Zamani N, Rahmani R, Arefian E. Non-coding RNAs enhance the apoptosis efficacy of therapeutic agents used for the treatment of glioblastoma multiform. J Drug Target. 2022 Jul;30(6):589-602. doi: 10.1080/1061186X.2022.2047191. Epub 2022 Apr 5. PMID: 35282758.

<sup>2)</sup>

Varela ML, Comba A, Faisal SM, Argento A, Franson A, Barissi MN, Sachdev S, Castro MG, Lowenstein PR. Gene therapy for high grade glioma: the clinical experience. Expert Opin Biol Ther. 2022 Dec 13. doi: 10.1080/14712598.2022.2157718. Epub ahead of print. PMID: 36510843.

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