

Review Biochim Biophys Acta Rev Cancer. 2023 May 12;188913.

doi: 10.1016/j.bbcan.2023.188913. Online ahead of print.

Multiple therapeutic approaches of glioblastoma multiforme: From terminal to therapy

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PMID: 37182666 DOI: [10.1016/j.bbcan.2023.188913](https://doi.org/10.1016/j.bbcan.2023.188913)

Abstract

Glioblastoma multiforme (GBM) is an aggressive brain cancer showing poor prognosis. Currently, treatment methods of GBM are limited with adverse outcomes and low survival rate. Thus, advancements in the treatment of GBM are of utmost importance, which can be achieved in recent decades. However, despite aggressive initial treatment, most patients develop recurrent diseases, and the overall survival rate of patients is impossible to achieve. Currently, researchers across the globe target signaling events along with tumor microenvironment (TME) through different drug molecules to inhibit the progression of GBM, but clinically they failed to demonstrate much success. Herein, we discuss the therapeutic targets and signaling cascades along with the role of the organoids model in GBM research. Moreover, we systematically review the traditional and emerging therapeutic strategies in GBM. In addition, we discuss the implications of nanotechnologies, AI, and combinatorial approach to enhance GBM therapeutics.

Keywords: Artificial intelligence; Combinatorial therapy; Glioblastoma multiforme; Nanotheranostic; Organoid models; Personalized medicine; Therapeutic strategies.

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