

Review

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New insight into targeting the DNA damage response in the treatment of glioblastoma

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Abstract

Glioblastoma (GBM) is the most common invasive malignant tumor in human brain tumors, representing the most severe grade of gliomas. Despite existing therapeutic approaches, patient prognosis remains dismal, necessitating the exploration of novel strategies to enhance treatment efficacy and extend survival. Due to the restrictive nature of the blood-brain barrier (BBB), small-molecule inhibitors are prioritized in the treatment of central nervous system tumors. Among these, DNA damage response (DDR) inhibitors have garnered significant attention due to their potent therapeutic potential across various malignancies. This review provides a detailed analysis of DDR pathways as therapeutic targets in GBM, summarizes recent advancements, therapeutic strategies, and ongoing clinical trials, and offers perspectives on future directions in this rapidly evolving field. The goal is to present a comprehensive outlook on the potential of DDR inhibitors in improving GBM management and outcomes.

Keywords: DNA damage response; Glioblastoma; Small molecule inhibitors.

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