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Epigenetic dysregulation in glioblastoma: potential pathways to precision medicine

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Abstract

The emerging field of epigenetics has been driving glioblastoma multiforme (GBM) development and progression. Various epigenetic alterations involving tumor suppressor genes, oncogenes, and signaling pathways have been identified in GBM. These alterations contribute to the aggressive behavior, therapeutic resistance, and tumor heterogeneity observed in GBM. Furthermore, the identification of specific genetic mutations associated with epigenetic dysregulation in GBM has provided new insights into the molecular subtypes and potential therapeutic targets within GBM. Understanding the complex interplay between genetic and epigenetic alterations in GBM is crucial for the development of effective and personalized therapies for this devastating disease. This review paper provides an overview of the epigenetic changes occurring in GBM and the potential of targeted epigenetic therapies as a promising avenue for GBM treatment, highlighting the challenges and future directions in this field has been deliberated.

Keywords: DNA methylation; Epigenetic-based therapy; Gene silencing; Histone modification; Inhibitors.

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