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Review

Brain Cancer Stem Cells: Current Status on Glioblastoma Multiforme

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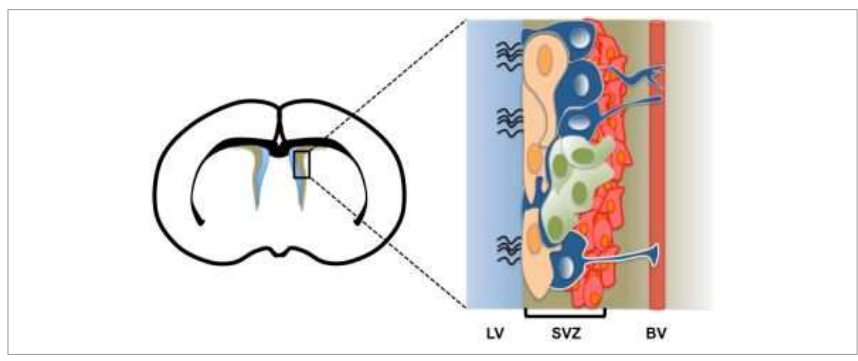
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Abstract: Glioblastoma multiforme (GBM), an aggressive brain tumor of astrocytic/neural stem cell origin, represents one of the most incurable cancers. GBM tumors are highly heterogeneous. However, most tumors contain a subpopulation of cells that display neural stem cell characteristics *in vitro* and that can generate a new brain tumor upon transplantation in mice. Hence, previously identified molecular pathways regulating neural stem cell biology were found to represent the cornerstone of GBM stem cell self-renewal mechanism. GBM tumors are also notorious for their resistance to radiation therapy. Notably, GBM “cancer stem cells” were also found to be responsible for this radioresistance. Herein, we will analyze the data supporting or not the cancer stem cell model in GBM, overview the current knowledge regarding GBM stem cell self-renewal and radioresistance molecular mechanisms, and discuss the potential therapeutic application of these findings.

Keywords: polycomb, BMI1; cancer stem cell; glioma; glioblastoma multiforme; astrocyte; astrocytoma; radioresistance; CD133; prominin



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