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Stem cells in brain tumor development.

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Abstract

Gliomas are highly infiltrative and aggressive brain tumors that are resistant to conventional therapies. Recent studies have implicated neural stem cells (NSCs) in brain tumor initiation and development. Subpopulations of stem-like cancer cells have also been isolated from brain tumors, and are purported to be important mediators of malignant behavior and therapeutic resistance. Similar signaling pathways may be operative in both neural and cancer stem cells, suggesting that neural developmental systems may provide important clues on brain tumorigenesis. Transcriptional regulators such as microRNAs may also contribute to NSC and brain tumor development. Understanding the biology of neural and cancer stem cells and their regulatory mechanisms may directly impact current efforts for more directed therapeutics against these highly aggressive tumors.

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