

PubMed

U.S. National Library of Medicine
National Institutes of Health

Display Settings: Abstract

[J Mol Med.](#) 2009 Sep 29. [Epub ahead of print]

Brain cancer stem cells.

Piccirillo SG, Binda E, Fiocco R, Vescovi AL, Shah K.

Department of Biosciences and Biotechnology, University of Milan Bicocca, Piazza della Scienza 2, Building U3, 20126, Milan, Italy.

Cancers comprise heterogeneous cells, ranging from highly proliferative immature precursors to more differentiated cell lineages. In the last decade, several groups have demonstrated the existence of cancer stem cells in both nonsolid solid tumors, including some of the brain: glioblastoma multiforme (GBM), medulloblastoma, and ependymoma. These cells, like their normal counterpart in homologous tissues, are multipotent, undifferentiated, self-sustaining, yet transformed cells. In particular, glioblastoma-stem like cells (GBSCs) self-renew under clonal conditions and differentiate into neuron- and glia-like cells, with aberrant, mixed neuronal/astroglial phenotypes. Remarkably, upon subcutaneous and intracerebral transplantation in immunosuppressed mice, GBSCs are able to form secondary tumors that closely resemble the human pathology, a property retained also throughout serial transplantation. The search is up for the identification of the markers and the molecular mechanisms that underpin the tumorigenic potential of these cells. This is critical if we aim at defining new therapeutic approaches for the treatment of malignant brain tumors. Lately, it has been shown that some key regulatory system that plays pivotal roles in neural stem cell physiology can also regulate the tumorigenic ability of cancer stem cells in GBMs. This suggests that the study of cancer stem cells in brain tumors might help to identify new and more specific therapeutic molecular effectors, with the cancer stem cells themselves representing one of the main targets, in fact the Holy Grail, in cancer cell therapy. This review includes a summary review on brain cancer cells and their usefulness as emerging targets in cancer cell therapy.

PMID: 19784875 [PubMed - as supplied by publisher]

[LinkOut](#) - more resources