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Primary brain tumors, neural stem cell, and brain tumor cancer cells: Where is the link?

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The discovery of brain tumor-derived cells (BTSC) with the properties of stem cells has led to the formulation of the hypothesis that neural stem cells could be the cell of origin of primary brain tumors (PBT). In this review we present the most common molecular changes in PBT, define the criteria of identification of BTSC and discuss the similarities between the characteristics of these cells and those of the endogenous population of neural stem cells (NPCs) residing in germinal areas of the adult brain. Finally, we propose possible mechanisms of cancer initiation and progression and suggest a model of tumor initiation that includes intrinsic changes of resident NSC and potential changes in the microenvironment defining the niche where the NSC reside. Copyright © 2009. Published by Elsevier Ltd.

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