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Isolation and characterization of cancer stem like cells in human glioblastoma cell lines.

[Qiang L](#), [Yang Y](#), [Ma YJ](#), [Chen FH](#), [Zhang LB](#), [Liu W](#), [Qi Q](#), [Lu N](#), [Tao L](#), [Wang XT](#), [You QD](#), [Guo QL](#).

Jiangsu Key Laboratory of Carcinogenesis and Intervention, China Pharmaceutical University, 24 Tongjiaxiang, Nanjing 210009, PR China; Jiangsu Center for Pharmacodynamics Research and Evaluation, China Pharmaceutical University, 24 Tongjiaxiang, Nanjing 210009, PR China.

To identify and compare the features of stem like cells in human glioblastoma cell lines U251, U87MG, A172 with primary cultured glioblastoma stem cells, the ratio of CD133(+) cells, the ability of tumor sphere formation, and self-renewing capacity of U251, U87MG, A172 cells in serum free medium plus EGF, bFGF and B27 supplement were detected. The results suggested that there might be more cancer stem like cells in U251 cells compared with others. CD133(+) cells enriched in SP cells and in U251 cells cultured with the serum free medium. They expressed the neural stem cell markers CD133 and Nestin, but lacked of neuronal and astrocyte marker MAP2, beta-III tubulin and GFAP. They could apparently generate both neurons and glial cells after serum retrieved in vitro. Gli1, Bmi1, Notch2 and PTEN were also found expressed highly in them. Moreover, CD133(+) cells were more resistant to hypoxia, irradiations and some chemotherapeutics than CD133(-)cells. So we suggested that glioblastoma stem like cells were existed in CD133(+) cells in U251 cell line with characteristics of self-renew and generation of an unlimited progeny of non-tumorigenic cells. Molecular and functional characterization of such a tumorigenic population may be exploited in the development of novel cancer therapeutic drugs.

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