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## Isolation and characterization of cancer stem cells from a human glioblastoma cell line U87

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### Abstract

A variety of malignant cancers have been found to contain a subpopulation of stem cell-like tumor cells, or cancer stem cells (CSCs). However, the existence of CSCs in U87, a most commonly used glioma cell line, is still controversial. In this study, we demonstrate that U87 cell line contained a fraction of tumor cells that could form tumor spheres and were enriched by progressively increasing the concentration of serum-free neural stem cell medium with or without low dose vincristine. These cells possessed the ability of self-renewal and multipotency, the defined characteristics of CSCs. Moreover, the tumors formed by the secondary spheres displayed typical histological features of human glioblastoma, including cellular pleomorphism, pseudopalisades surrounding necrosis, hyperchromatic nuclei, high density of microvessels and invasion to the brain parenchyma. These results indicate that gradually increasing the concentration of serum-free neural stem cell culture medium with or without vincristine is a simple and effective method for isolation of CSCs to study the initiation and progression of human glioblastoma.

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