A potential novel therapy of glioma targeting glioma-derived cancer-initiating cell (GIC)

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Glioma is the most common and fatal primary brain tumor in adults. Studies about brain tumor in recent years identified a minor population of cells in the brain tumor with stem-cell-like features, such as capacity of self-renewal and differentiation. This minor cell population is called brain tumor stem cell or mostly, glioma-derived cancer-initiating cell (GIC). GICs have been proved with resistance to both chemotherapy and radiotherapy, which makes them radically incurable and even worse. Therefore, it would be significant if any target molecules could be found as a novel therapy. Sox 5 protein is a transcription factor, which play its role during the process when the DNA is transcribed in to RNA. Former studies about Sox5 protein, a transcription factor, showed that it can suppress tumor progression by inducing acute cell senescence. The aim of this study was to establish an efficient Sox5 transfection system of GICs, and then investigate the role of Sox5 in suppressing glioma progression. This project was started with a traditional way of transfecting Sox5 protein, and as well as the control protein - enhanced green florescence protein (EGFP). Then, different agents were tested for their efficiency in this traditional way. Furthermore, a novel way called Amaxa nuclearfection was performed. In this novel nuclearfection, it is able to transfect millions of single cells within a single reaction. This study made a practical and stable base for later investigations.

Degree project in applied biotechnology, Master of Science (2 years), 2013
Examensarbete i tillämpad bioteknik 30 hp till masterexamen, 2013
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