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Novel biomarkers of brain tumor

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Glioblastoma multiforme (GBM) is the most common and most aggressive type of primary brain tumor in humans. Recent reports show that the treatments for GBM and other brain tumors produce long-term cognitive dysfunction. Explanations for the cognitive side effects often include the treatments that block proliferation of neural progenitor cells (NPCs) in the hippocampus and the peri-ventricular zones and/or damaging mature neurons (MNs) in the hippocampus, which plays a critical role in memory and learning. Glioblastoma cells (GBCs) divide an unlimited number of times, NPCs divide a limited number of times, whereas MNs are unable to divide once differentiated. This different potential for cell division raises the possibility of searching for GBC-specific molecules and events (miRNAs, mRNA, protein, alternative splicing, and protein isoforms) that may be associated with the uncontrolled proliferation of GBCs. In this study, we use Taqman miRNA array, Exon array, two-dimensional differential gel electrophoresis (2D DIGE) and mass spectrometry (MS) -based technologies to profile the transcriptome and proteome of rat GBCs compared to NPCs and MNs. Our ongoing study is to prove that inhibition of the GBC-specifc biomarker(s) kills GBCs but without harming NPCs and MNs, and without producing treatment-related cognitive side effects in rat GBM model (implant F98 GBCs in the brain of Fischer rat).

Biography

Da Zhi Liu has completed his Ph.D from Shanghai Institute of Materia Medica. After the postdoctoral studies, he becomes a professional researcher in University of California at Davis. He has published more than 30 papers in reputed journals and serving as an editorial board member of the Journal of Cytology & Histology.

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