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IGFBP2 promotes glioma tumor stem cell expansion and survival.

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Abstract

IGFBP2 is overexpressed in the most common brain tumor, glioblastoma (GBM), and its expression is inversely correlated to GBM patient survival. Previous reports have demonstrated a role for IGFBP2 in glioma cell invasion and astrocytoma development. However, the function of IGFBP2 in the restricted, self-renewing, and tumorigenic GBM cell population comprised of tumor-initiating stem cells has yet to be determined. Herein we demonstrate that IGFBP2 is overexpressed within the stem cell compartment of GBMs and is integral for the clonal expansion and proliferative properties of glioma stem cells (GSCs). In addition, IGFBP2 inhibition reduced Akt-dependent GSC genotoxic and drug resistance. These results suggest that IGFBP2 is a selective malignant factor that may contribute significantly to GBM pathogenesis by enriching for GSCs and mediating their survival. Given the current dearth of selective molecular targets against GSCs, we anticipate our results to be of high therapeutic relevance in combating the rapid and lethal course of GBM. Copyright © 2010. Published by Elsevier Inc.

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