Investigating Whether FOXO1 Hinders ZEB1 Gene Expression in (U87MG) Glioblastoma Cells

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The FOXO transcription factors are part of the Forkhead subfamily O, which contain four members: (FOXO1, FOXO3, FOXO4, and the less well conserved FOXO6) that regulate gene expression involved in metabolism, longevity and cell death. These FOXO transcription factors regulate gene expression and assist in the cell cycle progression of Glioblastoma cancer cells. Glioblastoma is one of the most common and aggressive types of cancerous tumors found in the brain and spine. Throughout the years, investigators have analyzed how Glioblastoma has affected patient survival. This led to the experiment of my gene of interest, ZEB1 (Zinc Finger E-Box Binding Homeobox 1). ZEB1 is a negative stem cell regulator that is expressed in brain cancer. If the gene ZEB1 is removed, there is an increase in stemness, tumorgenicity and shortened patient survival. This means that patients without ZEB1 in their tumors have aggressive and forceful cancers by stem cells transforming into many different cell types. I am investigating the ability of FOXO factors to impact the expression of certain stem regulators. The purpose of my research is to fully understand the cell cycle of U87MG cells, as well as to investigate the specific gene of interest, ZEB1, to find its contribution to Glioblastoma cancer cells. This research will help me understand and comprehend how genes and transcription factors can impact and play a major role in Glioblastoma cancer.