

Table S7. Literature review of the topologically important genes.

Gene Symbol	Description	Ref
NGFR	NGFR activates downstream signaling pathways including the Ras and PI3K-Akt pathway, which coordinately regulate tumor formation.	1-5
IRF7	IRF7 acts as a major driver of brain tumour progression via induction of glioma stem cell genesis and angiogenesis.	6
STAT3	STAT3 is a potent regulator of gliomagenesis through its induction of angiogenesis, immune invasion, and tumor invasion, and has been targeted by a number of drugs to inhibit glioma growth.	7-13
TRADD	TRADD is both a key driver of NF-κB activation in GBM and an important biomarker.	14
SOCS3	SOCS3 hypermethylation in GBM patients is significantly associated with poor outcome.	15-17
PYCARD	Hypermethylation of PYCARD is significantly associated with long-term survival GBM.	18
HSPA5	HSPA5 contributes to increased apoptosis resistance and growth of glioma cells and may be a target for enhancing the therapeutic effect of GBM.	19, 20
CASP1	The correlations between regulative apoptotic caspases resulted in altered GBM.	21
TNFRSF1A	TNFRSF1A is overexpressed in GBM and shows a significant positive correlation with angiogenesis, suggesting a molecular basis for imaging biomarkers.	22, 23
SPP1	Plasma SPP1 increased continuously in malignant glioma patients and was associated with poor survival.	24, 25
EFNB2	EFNB2 promotes glioma cell migration and invasion.	26

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