



Supplementary Fig. 1. Database prediction of IL32 and related hub genes. Genes from TCGA-GBM and GSE156902 were intersected to identify 12,098 commonly expressed genes. PPI networks were constructed using STRING, and hub genes were ranked using the CytoHubba plugin in Cytoscape based on degree centrality. Functional annotation through DAVID revealed enrichment in NF-kappa B and TNF signalling pathways. IL32 emerged as a core hub gene with strong associations with apoptosis, cytokine activity, and immune regulation. IL32 is a central hub gene in glioblastoma with key roles in inflammatory and tumour-promoting signalling pathways.