Diffuse invasion is an important factor leading to treatment resistance and a poor prognosis in gliomas. Zhang et al. found that expression of the tripartite motif containing 56 (TRIM56), a RING finger domain containing E3 ubiquitin ligase, was markedly higher in glioma than in normal brain tissue, and was significantly correlated with malignant phenotypes and a poor prognosis. In vitro and in vivo experimental studies revealed that TRIM56 promoted the migration and invasion of glioma cells. Mechanistically, TRIM56 was transcriptionally regulated by SP1 and promoted the K48-K63-linked poly-ubiquitination transition of IQGAP1 at Lys-1230 by interacting with it, which in turn promoted CDC42 activation. This mechanism was confirmed to mediate glioma migration and invasion. In conclusion, our study provides insights into the mechanisms through which TRIM56 promotes glioma motility, i.e., by regulating IQGAP1 ubiquitination to promote CDC42 activation, which might be clinically targeted for the treatment of glioma [1].

1)

Zhang Q, Zheng J, Wu W, Lian H, Iranzad N, Wang E, Yang L, Wang X, Jiang X. TRIM56 acts through the IQGAP1-CDC42 signaling axis to promote glioma cell migration and invasion. Cell Death Dis. 2023 Mar 4;14(3):178. doi: 10.1038/s41419-023-05702-6. PMID: 36870986.