PSMB8

The PSMB8 gene encodes a subunit of the immunoproteasome, a specialized proteasome involved in antigen processing and presentation in the immune system.

PSMB8-AS1 may have regulatory roles in the context of immune responses or other cellular functions.

Liu et al. aimed to investigate the specific roles of the long non-coding RNA (lncRNA) proteasome 20S subunit beta 8 (PSMB8)-antisense RNA 1 (AS1)/microRNA (miR)-382-3p/branched-chain amino acid transaminase 1 (BCAT1) interaction network in gliomas.

Western blotting and quantitative reverse transcription-polymerase chain reaction were performed to assess the expression levels of lncRNA PSMB8-AS1, BCAT1, and miR-382-3p. Moreover, the cell proliferation, migration, and apoptosis were assessed using the cell counting kit-8, Transwell, and caspase-3 activity assays, respectively. The biological role of lncRNA PSMB8-AS1 in glioma was investigated in vivo using a xenograft mouse model. Additionally, the associations among lncRNA PSMB8-AS1, miR-382-3p, and BCAT1 were analyzed using dual-luciferase and RNA immunoprecipitation assays and bioinformatics analyses.

Glioma cell lines and tissues exhibited overexpression of lncRNA PSMB8-AS1 and BCAT1 and low expression of miR-382-3p. Knockdown of PSMB8-AS1 remarkably repressed the tumor growth in vivo and the migration and proliferation of glioma cells in vitro. In contrast, the knockdown of lncRNA PSMB8-AS1 increased cell apoptosis. Mechanistically, PSMB8-AS1 directly targeted miR-382-3p. By sponging miR-382-3p, lncRNA PSMB8-AS1 stimulated the migration and proliferation of glioma cells and suppressed their apoptosis. Additionally, miR-382-3p directly targeted BCAT1. Inhibition of miR-382-3p reversed the antitumor effects of BCAT1 silencing on glioma progression.

The study revealed that lncRNA PSMB8-AS1 aggravated glioma malignancy by enhancing BCAT1 expression after competitively binding to miR-382-3p. Therefore, lncRNA PSMB8-AS1 may be a potential biomarker and therapeutic target for glioma treatment [1)]

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Liu H, Zhang J, Li J, Cao X, Yu K, Xia X, Li Z, Wang F. LncRNA PSMB8-AS1 increases glioma malignancy via the miR-382-3p/BCAT1 axis. Transl Oncol. 2024 Jan;39:101806. doi: 10.1016/j.tranon.2023.101806. Epub 2023 Oct 28. PMID: 38235619.