

PEN-2

Metformin is widely used in the treatment of [type 2 diabetes](#) (T2D) and plays a role in antitumor and antiobesity processes. A recent study identified its direct molecular target, [PEN-2](#) (PSENEN). PSENEN is the minimal subunit of the multiprotein complex γ -secretase, which promotes the differentiation of [oligodendrocyte progenitor cells](#) into [astrocytes](#) in the central nervous system. This study was mainly based on gene expression data and clinical data from [The Cancer Genome Atlas](#) and [Chinese Glioma Genome Atlas databases](#). Analysis of differential expression of PSENEN between tissues from 31 cancers and paracancerous tissues revealed that it had high expression levels in most cancers except 2 cancers. Using univariate Cox regression analysis and Kaplan-Meier survival analysis, a high expression level of PSENEN was shown to be a risk factor in low-grade gliomas (LGG). Gene ontology (GO) and Kyoto encyclopedia of genes and genomes (KEGG) analyses indicated that PSENEN is widely involved in immune-related signaling pathways in LGG. PSENEN expression level was significantly associated with TMB, MSI, tumor stemness index, and the expression levels of immunomodulatory genes in LGG. Finally, immune infiltration analysis revealed that PSENEN level was associated with the presence of various immune infiltrating cells, among which PSENEN was strongly associated with the presence of M2 macrophages and played a synergistic pro-cancer role. In conclusion, PSENEN may partially influence prognosis by modulating immune infiltration in patients with LGG, and PSENEN may be a candidate [prognostic biomarker](#) for determining prognosis associated with immune infiltration in LGG ¹⁾.

¹⁾

Chen K, Liang B, Ma W, Wan G, Chen B, Lu C, Luo Y, Gu X. Immunological and prognostic analysis of PSENEN in low-grade gliomas: An immune infiltration-related prognostic biomarker. *Front Mol Neurosci*. 2022 Jul 28;15:933855. doi: 10.3389/fnmol.2022.933855. PMID: 35966015; PMCID: PMC9366120.

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